OCTOBER 7, 1999 REVISION OF
WEB ATM FUNCTIONAL DESIGN DOCUMENT

# Web ATM (#99999)

# FUNCTIONAL REQUIREMENTS
# and
# DESIGN DOCUMENT

## Revision History

| No. | Date | By | Reason |
|-----|------|-----|--------|
| 0 | 08/18/99 | Larry Dwyer<br>Roy Evans<br>Ann Nelson<br>Mark Stockton<br>Anne Zeller | Baseline |
| 1 | 09/22/99 | Ann Nelson | 8/26-8/27/99 Walkthru Modifications |
| 2 | 10/07/99 | Ann Nelson | 9/30/99 Final Walkthru Modifications |
| | | | |

# Contents

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# I. DESCRIPTION

## A. INITIATIVE BACKGROUND

A new consumer bank infrastructure (Second Summit) is being developed that is targeted to provide differentiated services to our customers and improve the customer experience.

## B. CURRENT ENVIRONMENT

The traditional ATM technology has a number of significant obstacles preventing its ability to provide customer differentiation. These drawbacks include: an "old fashioned" screen presentation, limited banking functions, and a generic customer interface. The technology can only support limited differentiation based upon information contained on the debit card. Today the ATM technology can not effectively:

- Differentiate the customer by customizing their interaction with the bank based upon who they are
- Target specific advertising to a segment of customers or an individual customer
- Present our brand at the ATM channel in a way that clearly differentiates Bank of America from the rest of the industry

## C. FUTURE ENVIRONMENT

The Web ATM provides the ability to interact with the new "Model II" infrastructure to deliver a screen presentation that is personalized to the customer using the ATM. Over time this will include:

- the ability to implicitly determine which language to display on the screen
- dynamically adjusting the customer interaction based upon their preferences (e.g. default transaction, font size, voice, …)
- a faster, easier deposit screen flow
- which set of differentiated services to provide
- reinforcing marketing offers for products that the customer has been pre-approved for
- targeted advertising to customers based upon their demographics
- the sale of new products to customers (e.g. telephone time, theatre tickets, etc.)
- messaging status of bank contact and fulfillment to the customer

Additionally, this technology better positions the bank to support a consistent customer experience across delivery channels through the reuse of business logic and customer presentation style.

## D. BENEFITS AND JUSTIFICATION

The benefits of this effort are:

- Provide an improved customer experience by "personalizing" the screen to the customer instead of to the ATM
- Improve customer service by aligning the customer experience across delivery channels
- Deepen our customer relationships by selling new products at the ATM delivery channel
- Provide access to new revenue generating products and services

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- Leverage the infrastructure costs across multiple channels through the reuse of customer presentation and business logic
- Reduce application development costs and improve time to market by using WEB based technology
- Align Bank of America's ATM Application and Network with the ATM vendor's latest hardware and software implementation so that we will be able to take full advantage of the new functionality going into the future.

The business justification for the Web ATM project is being developed by Debit, ATM & Smart Card; ST&IPS; IS&S; ATM Channel Management; and Systems Support. The following is a summary of that business case:

- NPV Range of $100MM to $250MM based upon a 5 year investment period using a 15% discount rate

- Revenue Drivers: Enhanced service fees, external advertising income, income associated with internal advertisements and non-Bank customer fees

- Expense Drivers: Hardware upgrades, marketing, technology implementation and application development.

## E. IMPLEMENTATION APPROACH

This project will be implemented in phases as follows:

- Pilot – May 2000

This phase will implement the infrastructure to support the Web ATM. The functionality will be placed on approximately ~~10~~ 20 ATMs in either the Florida and/or Southwest market. Both NCR and Diebold devices will be represented in the Pilot. The business function will include all traditional ATM transactions, customer differentiated marketing and customer segment recognition.

- Pilot Phase II - TBD 2000

This phase will expand the presence of the Web ATM in either the Florida and/or Southwest market up to 100 ATMs and will implement additional business function. The scope of Phase II will be determined once the effort has been sized.

- Rollout – TBD 2001 – 2002

The rollout approach has not yet been determined. The major factors surrounding the rollout include:
- the completion of the TCP/IP based router network rollout along with the direct-attached ATM rollout (all markets complete by 2001)
- the determination of which ATMs will be targeted for upgrade and
- the successful completion of the Pilot.

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## II.  BUSINESS SCOPE

### A. OVERVIEW

The following business requirement section defines those functions that must be delivered as part of the initial production Pilot.  Requirements for future project phases are not included.

### B. BUSINESS REQUIREMENTS

| | Requirement | Category |
|---|---|---|
| **1.0** | **Hardware** | |
| 1.1 | The Web ATM will be a full function, depository ATM that provides existing function as well as new intranet services for active ATM or 24-Hour/Check Card customers | |
| 1.2 | The Web ATM Pilot will utilize both Diebold and NCR ATMs. | |
| 1.3 | The ATMs will use the following hardware/software:<br>Hardware:<br>*Provide NCR and Diebold  details from IBM spec.*<br>Software:<br>• Microsoft /NT Operating System<br>• Microsoft Internet Explorer<br>• IBM Web ATM Core Application<br>Features:<br>• Icon  based graphics<br>• Animation<br>• English and Spanish<br>• Unique ATM signage<br>• Audio on Thank You screen and supported for certain ads | |
| 1.4 | For security issues and customer service reasons, the ATM should contain a tactile keypad (the current function keys will be used as opposed to implementing a touch screen). | |
| 1.5 | The ATM will meet all hardware, network security, and Y2K requirements as well as be certified as meeting ANSI security requirements. | |
| 1.6 | The ATMs will be alarmed | |
| **2.0** | **ATM Transactions** | |
| 2.1 | The ATM will offer transactions in English and Spanish. All other languages currently in production, will not be supported (e.g. Chinese and French) | |

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| 2.2 | The pilot Web ATM will offer the supported Model proprietary transactions:<br>• Transfers<br>   • Checking to Saving<br>   • Saving to Checking<br>   • Checking to Checking<br>   • Savings to Savings<br>   • Line of Credit to Checking<br>   • Line of Credit to Savings<br>   • Credit Card to Checking ~~(not until 0~~(after 00.2)<br>   • Credit Card to Savings ~~(not until 0~~(after 00.2)<br>• Cash Withdrawal<br>   • Checking<br>   • Savings<br>   • Line of Credit<br>• Cash Advance<br>   • VISA ~~(not until 0~~(after 00.2)<br>   • Master Card ~~(not until 0~~(after 00.2)<br>• Fast Cash<br>• Full Statement<br>   • Savings<br>   • Checking<br>• Mini-Statement<br>   • Savings<br>   • Checking<br>• Deposit<br>   • Savings<br>   • Checking<br>• Payments Enclosed<br>• Electronic Payment<br>   • Checking to Line of Credit<br>   • Savings to Line of Credit<br>   • Checking to Credit Card ~~(not until 0~~(after 00.2)<br>   • Savings to Credit Card ~~(not until 0~~(after 00.2)<br>• Balance Inquiry<br>   • Checking<br>   • Savings<br>   • VISA ~~(not until 0~~(after 00.2)<br>   • MasterCard (~~not until 0~~after 00.2)<br>   • Line of Credit<br>• ~~Message to bank~~ | |
| 2.3 | The ATM will offer the following acquirer transactions<br>• Cash Withdrawal and Cash Advance<br>• Fast Cash<br>• Balance Inquiry<br>• Transfer | |
| 2.4 | New components must support the current stand-in processing for host outages. | |
| **3.0** | **Screens** | |

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| 3.1 | The ATM will use new graphic screens. | |
| 3.2 | HTML pages will be created and used for presentation | |
| 3.2.1 | Separate HTML screens will be created for each ATM transaction. New HTML screens will be created for any new transactions not currently supported by the BASE24 application | |
| 3.3 | The actual transaction screen flow and BASE24 mapping for all functions must stay consistent with the BASE24 mapping of the Bank of America Model ATMs, including the receipt option. They are described in section IV of this document. The only differences in the flow are: 1) the Pin and Language Selection functions have been combined into one screen; 2) the Main Menu now has a page 2, and the Check Re-order/Message Bank option was moved there; 3) the "Another Transaction " screen will contain the same additional web options as on page 2 of the Main Menu. | |
| 3.4 | Create a new load image for the Web ATM to take advantage of the HTML screen flow capabilities | |
| 3.5 | The maintenance and management of the new screens will need to be supported. Part of this effort will include keeping the Model ATM screens and states in sync with the Web HTML screens and 912 emulator. | |
| **4.0** | **Customer Differentiation** | |
| 4.1 | Use the customer segment (Basic, Associate, High Value, Plus, Premier, and Private), to differentiate the user interface "look and feel". This differentiation can use color, icons or graphics to indicate segment. | |
| 4.2 | Personalize the interaction with the customer by possibly using their name in the ATM dialog. (Needs further discussion.) | |
| **5.0** | **Marketing** | |
| 5.1 | Show advertising to specific targeted customers based upon predefined marketing data. These ads will target specific individuals based upon the debit card account number. | |
| 5.2 | Show targeted advertising to an entire segment of customers (Basic, Associate, High Value, Plus, Premier, and Private). Additionally, support two segments of acquired customers (Basic and Targeted). Targeted acquired customers are recognized by BIN | |
| 5.3 | Support the ability to vary segmented advertisements based upon the geographic location of the ATM. | |
| 5.4 | When the customer dialog includes multiple transactions vary the advertising presented to the customer. The sequence should be to show any ad targeted for the individual, followed by ads for the customer segment within the ATMs geographic location, followed by ads for the customer segment, followed by the default ad for the system. The system should support the sequencing of multiple ads within a customer dialog. | |
| 5.5 | Provide default ads for proprietary and acquired customers in the event that customer information and differentiated ads are not available. | |
| 5.6 | Provide the ability for the customer to request contact from the bank for specific financial product information. The financial products to be supported will be determined as the project progresses. The follow up contact can be via phone, e-mail, us mail or banking center appointment. | |
| 5.7 | Ad campaigns will have start and end dates | |
| 5.8 | Support showing both a main advertisement as well as a teaser ad on the screen. | |
| 5.9 | Ads will be in the language specified by the customer at PIN entry time. | |
| 5.10 | Ads for the Pilot will only be Bank internal ads, not external ads. | |

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| 5.11 | Customer-targeted marketing would not begin prior to the Main Selection screen, to allow time for campaign information to be built. If it is not returned in time, the targeted marketing will be put off until the "please wait" screen. | |
|------|------|---|
| **6.0** | **Transaction Record** | |
| 6.1 | The ATM transaction records will be presented in the language specified by the customer and mirror the Bank of America ATM transaction record, containing all pertinent Reg. E data (if applicable) | |
| 6.2 | Support printing marketing data on the ATM receipt based upon customer segment (Basic, Associate, High Value, Plus, Premier, and Private). Additionally, support two segments of acquired (Basic or Targeted). | |
| **7.0** | **Balancing and Servicing** | |
| 7.1 | The currently supported replenishing and balancing functions will need to be supported on the ATM:<br>• Balance Terminal<br>• Mid-point adjustment<br>　• Increase Cash<br>　• Decrease Cash<br>• Print machine sub-totals<br>• Clear Deposits/Cards Retained | |
| 7.2 | Provide technician access to standard ATM diagnostic tools for the Diebold and NCR devices. | |
| 7.3 | Provide electronic journal support for the ATM devices consistent with the functions provided in the current ATM environment. | |
| 7.4 | Provide support for continuous availability during ATM servicing | |
| **8.0** | **Monitoring** | |
| 8.1 | Provide the ability to monitor the Web ATM's technology. | |
| 8.2 | Develop a status byte for reporting faults at the Web ATM | |
| 8.3 | Provide the ability for midrange and ANS operations groups to manage the new hardware and software components introduced by the Web ATM project | |
| 8.4 | Attempt to integrate Web ATM into current monitoring environments wherever possible so that it does not require additional watch points. | |
| **9.0** | **Security** | |
| 9.1 | Web ATM Banking will need to address security issues related to card and PIN activation and customer transactions | |
| **10.0** | **Reporting** | |
| 10.1 | The systems will need to provide detailed MIS reporting on the number and types of transactions being performed at the ATM. The actual report layout and definitions will need to be defined. | |
| 10.2 | All ATM activity being logged. Reporting will reflect any new activity. | |

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## C. Business Alternatives

### 1. Selected Alternative

Proceed with the development of a Web based ATM infrastructure to provide
- Differentiated services to the customer
- Targeted advertising to individuals and customer segments
- Branded look and feel at the ATM channel

Additionally, since Web ATMs will not replace ALL of Bank of America's ~~Heritage~~Traditional ATMs in the near future, some of the Web ATM's features will be integrated into the ~~Heritage~~Traditional ATM hardware at some point.

### 2. Other Alternatives Reviewed

#### a) Use current ATM technology

The use of current ATM technology was considered for delivering differentiated customer service, targeted advertising and the brand implementation. However, limitations in the technology would significantly hinder our ability to deliver the next generation product. Specifically, the use of states/fits in the ATM configuration technology along with the "DOS" like user interface is not flexible enough to support all the business needs.

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## 3. Operational/Procedural Impacts

| Area/Item Affected | Impact |
|---|---|
| Banking Centers | Potential modifications to ATM servicing procedures |
| Vendors | Potential modifications to ATM servicing procedures |
| Marketing | Changes in process to define and implement marketing campaigns on the ATM channel |
| Field Service Personnel | Changes in procedures related to ATM field diagnostics to take into account new ATM hardware and software |
| ATM Network Services | Changes in procedures related to ATM device outages due to new ATM hardware and software |
| Back Office Departments | Changes in procedures for fulfillment of Web ATM requests |
| Tandem Technical Support | Additional interfaces and technology such as OSS, ITP Web Server, and more MQ queues to support. |
| ATM Software Development | New software implementation procedures |
| Midrange Operations / Network Operations | New Tandem components to support:<br>• TCP/IP ATMs<br>• New Web Server environments<br>• MQ Series application and queues |

## 4. Training Impacts

| Area/Item Affected | Impact |
|---|---|
| Banking Centers | Training on any modifications to ATM servicing procedures |
| Vendors | Training on any modifications to ATM servicing procedures |
| Field Service Personnel | Training related to ATM field diagnostics to take into account new ATM hardware and software |
| ATM Network Services | Training on any procedure changes related to ATM device outages due to new ATM hardware and software |
| Back Office Departments | Training related to changes in fulfillment procedures |
| Tandem Technical Support | Training necessary to support the installation and maintenance of the new interfaces and technology. |
| ATM Software Development | Training on all of the new software technology being used. |
| Call Centers | Training related to handling new disputes, etc. |
| Mid-Range Operations | Training on any procedure changes to support new software components on the TANDEM |

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## 5. Geographic Impact

| Area/Item Affected | Impact |
|---|---|
| Florida or the Southwest | Minimal impact to the ~~10~~ 20 sites that will participate in the Pilot Phase I and up to 100 sites in Phase II. |

## 6. Customer Impact

| Area/Item Affected | Impact |
|---|---|
| Florida or the Southwest | • Customers who use the ATMs in the Pilot will see a new and improved interface at the ATM channel.<br>• Additional E-Mail generated when a customer requests product/service information at an ATM |

## D. RISK ASSESSMENT

| | Risk | Probability | Impact on the business | Approach to Manage or Mitigate | Responsibility |
|---|---|---|---|---|---|
| 1. | The new ATM technology could compromise the reliability of the Pilot ATMs | Medium | Low | Significant testing will be completed prior to implementation | Project Initiative<br><br>Team Abowd |
| 2. | MQ Series/ Service Broker/ IMS performance may not scale. | High | May have to display "default" screens if customer profile information cannot be retrieved in a timely manner | Can get Customer Segment info from Base24 CAF (00.1) / Use default screens | Fei |
| 3. | The IBM Web product is unproven technology | Medium | Customers will experience problems at the ATM | Significant testing. | IBM/Fei |
| 4. | The iTP Web Server is new to Bank of America technology. | Low | Will not be able to provide customer differentiation | Use ATM resident default screens. Significant testing. | Fei |
| 5. | 912 emulation may constrain our ability to simplify the customer dialog. | High | Would delay introduction of enhanced features | Pursue replacement of 912 emulation with a more open interface. | Fei Abowd |
| 6. | The use of TCP/IP protocol at the ATM may introduce new security risks. | Low | May be easier to pirate information needed to create a card. | Pursue encryption of more than just the PIN for a future phase. | Fei |

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## III. SYSTEMS SCOPE

### A. PROPOSED SYSTEMS SOLUTIONS

The current ATM system is based on the ACI Base24 product and implements proprietary ATM vendor message structures over a router-based Frame Relay network using the SNA/SDLC communications protocol. The proposed Web ATM product will use this same message interface over the same Frame Relay network but will use the TCP/IP communications protocol. The current ATM screens will be replaced with browser-displayed HTML pages. All new functionality will be implemented using Web Browser/Server technology.

The sections that follow specify the systems scope for Phase I of the Pilot.

### B. SYSTEMS LEVEL FLOWCHART

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## 1. WEB ATM

The Web ATM will be based on IBM Canada's ATM w/Web Extensions product and will be implemented on both Diebold and NCR ATMs using standard WOSA APIs for device control. This product runs under Windows NT and employs Browser technology for screen presentation, and JavaScript functions to support dynamic HTML pages and new Web application services.

Model ATM transactions will be supported by the ProCash DDC (Direct Diebold Connect) 912 emulation software from Siemens Nixdorf with Web extensions that allow the use of HTML pages in place of the standard screens contained in the Load Image file.

The Web Extensions will also provide the ability to put additional options on the DDC menus that allow accessing of services and pages from a Web Server. The Web extensions will also allow the Web services to access ATM devices such as the keyboard and printer so that they can interact with the ATM customer.

The two pieces of software will communicate via shared memory and event objects supplied by IBM designed and written "Core" software. The interactions between the various ATM sub-systems are described in more detail in the "III. INTERFACE PROCESSING" section.
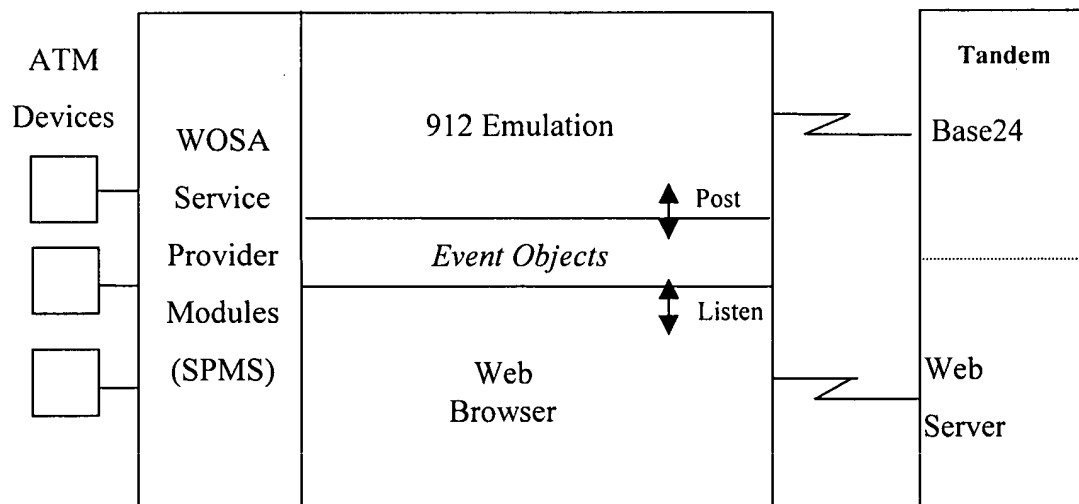


## 2. NETWORK ACCESS

Network Access for the ATM will be through an Ethernet LAN and Cisco Router using TCP/IP. The Router will provide gateway services into the frame relay-based Model Digital Network.

The move to the TCP/IP protocol will implement tunneling and have no impact on Base24 transaction security. The current DES-based session security will remain as it is and transactions will continue to traverse the same trusted Frame Relay network.

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In the Pilot phase there will be no sensitive information in the Web Server path. Later phases will require the addition of customer authentication and a security protocol such as the Secure Sockets Layer (SSL). Note. The iTP Secure Web Server's SSL implementation supports 128-bit RC4 encryption domestically.

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## 3. BASE24

With the initial phase of development it is important to change network protocols. TCP/IP is the industry standard protocol for Web based transactions and therefore to fully take advantage of developed services the Web ATM should exploit the protocol for access to Base24.

Web ATMs will generate additional unsolicited status message types if they encounter problems related to the Web server path. The Base24 Device Handlers must be modified to recognize and parse these new statuses and log appropriate error messages for the ATM Monitoring system(s).

There are no other planned changes to the Model Base24 system. WEB ATMs will appear as Diebold's standard MDS (Modular Delivery System) ATMs using currently supported 912 messages over TCP/IP protocol. The Web ATM will have a special LOAD IMAGE file that contains only states and FIT's. No screens are needed, as the ATM will display HTML pages supplied by a Web Server.

## 4. Tandem's iTP SECURE WEB SERVER

The Tandem Web server will provide two main functions:

- Support URL requests and serve up HTML and Java applets for the supported set of transactions
- Route messages from Web ATM client to the appropriate application server using CGI[1].

The Web Server runs in Tandem's Open System Services (OSS) environment - Tandem's environment for portable applications. (OSS is based on the X/OPEN CAE Specifications, which implement the POSIX 1 and POSIX 2 standards, and the UNIX KORN shell). Most OSS commands and utilities have a direct counterpart in UNIX. Others are unique and provide interoperability with the proprietary Guardian environment – very useful if we need to access ATM information maintained in Base24 files.

> Note: The iTP Secure WebServer complies fully with:
>
> - HyperText Transfer Protocol (HTTP/1.1)
> - Common Gateway Interface (CGI/1.1)
> - Secure Sockets Layer (SSL 2.0 and SSL 3.0)
> - Microsoft Private Communications Technology (PCT version 1) protocol

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[1] CGI (Common Gateway Interface) is a standard for connecting an application server to a Web server.

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# 5. APPLICATION SERVERS

When the Web server receives input from a web client, it may satisfy the request by returning a requested document (e.g. Web page) or may forward the request to an application program whose results are returned to the requesting client.

Application servers will be written to provide session and transaction integrity, directory and gateway services to Web Service providers. They will also provide translation and formatting functions between the Web ATM and the service providers, and will manage the configuration and monitor the availability of the Web ATM.

The Application servers will provide the following functions:

- Route transaction requests to the proper destination and provide any message translation necessary
- Manage the Web ATM session and transactions and perform any recovery and notification as necessary
- Initiate and manage any gateways to servers that provide services for the Web ATM
- Provide Directory services that define the transactions available at the Web ATM and the destinations that can provide those services
- Monitor the Web ATM and server components and support any network management or software distribution requests

Java will be used wherever possible to support the Model II requirement that code should be re-usable/portable as much as possible. These application programs will be implemented as Java servlets that receive requests via a CGI interface. They will receive information from the Web server through environment variables and standard input, and return dynamically generated Web content via standard output. The Web Server is then responsible for returning the information to the ATM client. The Servlet Server Class (SSC) allows CGI applications to be written as Java servlets.

# 6. MQ SERIES MESSAGE BUS

The Web ATM application, in conformation with the Model II architecture, will obtain customer profile information from the CICS-based Service Broker application via the Bank's MQ Series Message Bus.

The MQ Series software provides application-programming services that enable processes on different nodes on a variety of machines and operating system types to communicate with each other using message queues. It provides a common API called the Message Queue Interface or MQI, so that programs developed on one platform can be readily transferred to another. MQ Series takes care of network interfaces, assures delivery, deals with communication protocols, and handles recovery after system problems. Both TCP/IP and SNA network protocols are supported. The latest Tandem version also adds ICE (Insessions' Intersystem Communication

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Environment) support. Note: The MQ Series for Tandem was developed by Candle Corporation, an IBM Business Partner.

# 7. SERVICE BROKER

The Service Broker receives requests from its Service Request Queue and invokes the appropriate script based on the standard header. The Service script contains the bank workflow logic to satisfy the client service request. The request is translated into a Legacy request or requests and messages are sent across the Message Bus to the appropriate Legacy application(s). The Legacy response(s) are then reformatted into a client response in a Standard Message Interface (SMI) format.

The SMI is based on the Business Object Document Model (BOD) from the Open Applications Group. The Business Object Document (BOD) is used to communicate a request from a requesting application to a destination business application (such as the service Broker). In turn, the destination business application returns a Business Object Document response.

Each BOD is a self-defining message that includes all the business details needed by applications using the SMI APIs.

The Standard Message Interface (SMI) allows a calling program to either encode or decode an Open Applications Group (OAG) message using a set of API calls. These APIs use a message handle to keep track of the state of the encode/decode process for a given message and provide consistent return area information about the success of an API call. All of the APIs are also available to Java classes through the SMI package that implements a Java Native Interface (JNI) to these APIs.

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## C. AREAS AFFECTED

### 1. System / Technical Summary

| Area/Item | Impact |
|---|---|
| **ATM** | • WOSA Service Provider Modules (Device Drivers)<br>• New Browser technology / HTML screens<br>• Diebold 912 emulation for Model transactions<br>• Marketing data printing on receipts<br>• Additional status messages for thermal printer / Web Server problems<br>• Electronic Journal support<br>• Balancing and servicing<br>• Diagnosis tools |
| **BASE24** | • TCP/IP protocol support<br>• Single PIN & language selection<br>• New load image to support Web ATM requirements<br>• Support for new device status<br>• New Web Server status messages from ATM |
| **New Tandem Software** | • Open System Services (OSS)<br>• iTP Web Server<br>• New application servers:<br>  ▪ To obtain customer profile information<br>  ▪ To select an Ad to display<br>  ▪ To administer customer/Ad profile data<br>  ▪ To load campaign / card lists<br>  ▪ To send E-Mails to Customer Support areas<br>  ▪ To collect MIS information<br>• MQ Series for Tandem |
| **ATM Monitoring** | New ACI and Tandem TCP/IP components |
| **GASPER/Thin Monitoring** | New EMS events will be needed to make this possible |
| **Service Broker** | New MQ Series queues (to/from Tandem) |

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## IV. FUNCTIONAL DESIGN

### A. CUSTOMER PRESENTATION
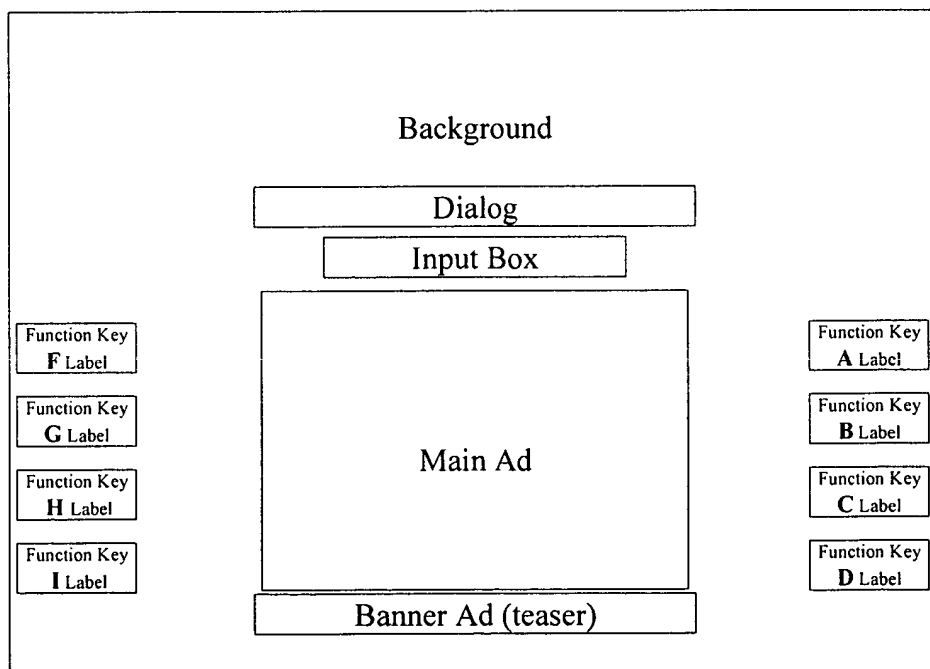
#### 1. General Approach

**Summary**
The initial Pilot Phase of the Web ATM project will:
- Implement the Bank of America brand using the corporate standards
- Use customer profile information to
  - Target advertising to an individual or segment of customers
  - Customize the screen background
  - Personalize the dialog with the customer
- Simplify customer dialog by combining language preference and PIN entry screens
- Provide new customer service options for Bank product information

#### 2. Web ATM Screen Zones

The ATM Consumer Screen will be partitioned into several visual "zones". These zones will be used for different functions. Responsibility for zone placement is an ongoing cooperation between the Systems personnel and the Marketing personnel. The following diagram illustrates the current Web ATM screen zones:

Background

Dialog

Input Box

Function Key
F Label

Function Key
G Label

Function Key
H Label

Function Key
I Label

Main Ad

Function Key
A Label

Function Key
B Label

Function Key
C Label

Function Key
D Label

Banner Ad (teaser)

- *Background* – this visual zone extends over the entire consumer screen area and provides a context for the other zones. The other zones are *overlaid* on top of the background. The background will contain brand information and logos that represent the corporate image.

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- *Main* – this visual zone is centered on the background and is generally used to present the major advertising material. Typically this zone will display animated or video "film clips". The main ad space can have three different categories of ads:

  - *Attract Ads* – play when there is no customer using the ATM. Attract ads are generally video clips that play in a repeating loop. These ads will not contain audio material

  - *Targeted Ads* – play when there is a customer using the ATM. After the customer is identified via the card read, ads that have been specified for this customer will be activated. The Targeted ads will play throughout the customer session. These ads may contain audio material.

  - *Closer Ads* – play at the end of the customer session. Closer ads will be activated when the customer has elected to terminate the session These ads will play while the customer is retrieving the card, receipt, and any cash or coupons. These ads may contain audio material.

- *Banner* – this visual zone is centered at the bottom of the screen area. Additional advertising material will be played in this zone. This ad space can be used for "Teaser" ads that change throughout the session or for "specials" that are specific to that location.

- *Dialog Box* – this visual zone contains the customer instructions during the ATM session. The customer will be prompted with text displayed in this zone to "select a function" or "enter their PIN".

- *Input Box* – this visual zone is centered in the middle of the screen and overlays the Main Ad zone. The Input box is used whenever customer information is requested from the numeric keypad. As customers type numbers from the keypad, they will be displayed in the Input Box. Certain privacy elements such as PIN data will be displayed as asterisks.

- *Function Key Labels* – in addition to the numeric keypad, the customer will also use the ATM function keys to make menu selections or product decisions (same as the current traditional ATMs). In order to guide the customer, there can be up to eight of these Function Key Labels that correspond to each of the ATM's function keys. As with current Base24, the positioning will be based on the ATM screen type. These Labels provide the "meaning" of each specific function key. The content of the Function Key Labels could change with each interaction with the customer.

In addition to the screen zones, the customer receipt will also be divided into zones. The current content and format on the receipt will be preserved. However, there will be advertising space reserved at the top of the receipt. This area is called the *Receipt Ad*.

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## 3. Transaction/Screen Flows

Representative samples of the proposed Web-Enabled ATM screen flow, based on the Model Base24 transaction flow with some modifications, are documented below. Although the samples in this document are only in English, Web-Enabled ATMs will support screen dialog and advertisements in the customer's language of choice. Two types of Model Base24 transactions are not included because the user interface will not change for this project: Electronic Journaling and System Administrative (Balance Terminal, Mid-Point Adjustment, etc.); the 912 Emulator will handle them in the standard way.

The information is divided by category of screen flow. For the purposes of this document, there are three categories of screen flows, where "On-Us" means any Bank of America card (except credit cards, which will be implemented after 00.2) at a Model ATM:

- Initial and Closing Customer Flows

- Main Menus
  1. On-Us Menus
  2. Acquirer Menus

- Specific Transaction Flows
  1. Fast Cash (On-Us)
  2. Cash Withdrawal (On-Us)
  3. Cash Withdrawal (Acquirer)
  4. Deposit (On-Us)
  5. Payment (On-Us)
  6. Transfer (On-Us)
  7. Check Re-order / Message (On-Us)
  8. Request for Product Information (On-Us)
  9. Request for Product Information (Acquirer)

The **Screen Name** column lists the major screens and the name by which they are referred. The **Screen Dialog** column lists the fixed text (prompts related to an ATM transaction and not to an advertisement), that will be displayed on the screen. The **Processing** column describes the relevant processing that occurs while at the screen. The **Available Ad Type** column lists what types of ads may play while the screen is displayed. The **Function Key** column lists the active function keys for the screen.

In the Processing section of the screen flow, getting customer information from BOSS is mentioned frequently. It is new to the ATM transaction flow, and will provide more information than Base24's CAF does. It will also return data that will not be used, such as information about accounts that are NOT linked to the customer's ATM card (the customer will be given access only to accounts specifically linked to the card). The response time for Service Broker to request a customer's profile and receive the reply is currently reported to be about two seconds.

In general, the same Main ad will play throughout an entire transaction, without interruption for errors or exceptions. All the various error and exception screens (i.e., "Do you need more time for this transaction?") will continue to display the same Main ad as was on the

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transaction screen where the exception or error occurred. When the transaction is finished the ad will end. If the customer starts a new transaction, the same Main ad will start again from the top, or, if another ad was defined for this campaign, the next Main ad in the list will start. See the Ad Selection Criteria section IV.4 of this document for further details on how ads on the screen will work.

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**Initial and Closing Customer Flows**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Attract | | Set default background (no audio here) | • Teaser<br>• Attract | |
| Welcome | *Please insert your card* | If On-Us, get customer information from BOSS | • Teaser<br>• Attract | |
| Language/PIN (New) | *Enter PIN (ID Code) then press this key*<br>*Despues de Marcar Su Pin Oprima Aqui* | | Teaser | **C** – Press this key (English)<br>**D** – Oprima Aqui (Spanish) |
| Take Your Card | *Thank you, please take your card* | Return card to customer/beep and an audio Thank You | • Teaser<br>• Closer | |

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**Main Menus**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Acquirer Main Transaction Menu | *Press function key to select transaction* | • Used for non Bank of America debit cards and credit cards<br>• Begin to customize screens based on bin—determine whether targeted acquirer or basic acquirer customer.<br>• Branch to selected financial transaction flow | • Targeted<br>• Teaser | **I** – Additional Services<br>**A** – Fast Cash<br>**B** – Withdrawal<br>**C** – Balance Inquiry<br>**D** – Transfer |
| On-Us Main Transaction Menu, Page 1 | *Press function key to select transaction* | • Used for Bank of America debit cards<br>• Begin to customize screens based on Customer Profile info returned from BOSS—i.e., use customer's name, set background based on Customer Segment, etc.<br>• If Additional Services display On-Us Main Transaction Menu, Page 2<br>• All other selections, branch to selected financial transaction flow | • Targeted<br>• Teaser | **F**- Deposit<br>**G** – Payment<br>**H** – Statement<br>**I** – Additional Services **(new)**<br>**A** – Fast Cash<br>**B** – Withdrawal<br>**C** – Balance Inquiry<br>**D** – Transfer |
| On-Us Main Transaction Menu, Page 2 **(New)** | *Press function key to select transaction* | • Used for Bank of America debit cards<br>• If request for Check Reorder (F) then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then display the "How May We Contact" screen<br>• If Return to Main Menu (B) then display On-Us Main Transaction Menu, Page 1. | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Return to Main Menu |

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**Fast Cash (On-Us)**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Select Amount | *Select Amount* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **G** - $20<br>**H** - $40<br>**I** – Return to Main Screen<br>**B** - $60<br>**C** - $100 |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Take Cash | *Please take your cash from the dispenser* | • Eject card and display "Closer" screen | • Targeted<br>• Teaser<br>• Receipt | |

## Cash Withdrawal (On-Us)

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Enter Amount | *Enter amount for the transaction* | • | • Targeted<br>• Teaser | **A** – Correct<br>**B** – Change |
| Select From Account Type | *Press function key to select from account type* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **G** – Credit<br>**H** – Line of Credit<br>**I** – Return to Main Menu<br>**B** – Checking<br>**C** – Savings/Money Market |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Which Account (OAR only) | *Press function key to select the account* | • Format request for financial transaction | • Targeted<br>• Teaser | **A-D** contain a list of accounts |
| Wait for processing (OAR only) | | • | • Targeted<br>• Teaser | |
| Take Cash | *Please take your cash from the dispenser* | • | • Targeted<br>• Teaser<br>• Receipt | |
| On-Us - Another Transaction (New) | *Would you like another transaction?* | • If dialog ending (NO) display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then display the "How May We Contact" screen. | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

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## Cash Withdrawal (Acquirer)

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Enter Amount | *Enter amount for the transaction* | • | • Targeted<br>• Teaser | **A** – Correct<br>**B** – Change |
| Select From Account Type | *Press function key to select from account type* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **I** – Return to Main Menu<br>**B** – Checking<br>**C** – Savings/Money Market |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Take Cash | *Please take your cash from the dispenser* | • | • Targeted<br>• Teaser<br>• Receipt | |
| Acquirer– Another Transaction | *Would you like another transaction?* | • If dialog ending (NO) display "Closer" screen<br>• If request for another transaction (YES) then display Acquirer Main Transaction Menu | • Targeted<br>• Teaser | **G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

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**Deposit (On-Us)**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| | *Enter amount for the transaction* | • | • Targeted<br>• Teaser | **A** – Correct<br>**B** – Change |
| Deposit Into Account Type | *Press function key to select Deposit account type* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **I** – Return to Main Menu<br>**B** – Checking<br>**C** – Savings/Money Market |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Which Account (OAR only) | *Press function key to select the account* | • Format request for financial transaction | • Targeted<br>• Teaser | **A-D** contains a list of accounts |
| Wait for processing (OAR only) | | • | • Targeted<br>• Teaser | |
| Insert Envelope | *Insert your sealed envelope into depository* | • | • Targeted<br>• Teaser<br>• Receipt | |
| On-Us - Another Transaction (New) | *Would you like another transaction?* | • If dialog ending (NO) display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then display the "How May We Contact" screen. | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

**Payment (On-Us)**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Enter Amount | *Enter amount for the transaction* | • | • Targeted<br>• Teaser | **A** – Correct<br>**B** – Change |
| Select Payment Method | *Press function key to select payment method* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **I** – Return to Main Menu<br>**A** – Enclose Cash or Check with Payment Coupon in envelope<br>**B** – Payment to Line of Credit from Checking<br>**C** – Payment to Line of Credit from Savings |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Which Account (OAR only) | *Press function key to select the account* | • Format request for financial transaction | • Targeted<br>• Teaser | **A-D** contains a list of accounts |
| Wait for processing (OAR only) | | • | • Targeted<br>• Teaser | |
| Insert Envelope | *Insert your sealed envelope into depository* | • | • Targeted<br>• Teaser<br>• Receipt | |
| On-Us - Another Transaction (New) | *Would you like another transaction?* | • If dialog ending (NO) display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then display the "How May We Contact" screen. | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

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**Transfer (On-Us)**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| | *Enter amount to transfer* | • | • Targeted<br>• Teaser | **A** – Correct<br>**B** – Change |
| Select From Account Type | *Press function key to select from account type* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **G** – Credit<br>**H** – Line of Credit<br>**I** – Return to Main Menu<br>**B** – Checking<br>**C** – Savings/Money Market |
| Select To Account Type | *Press function key to select to account type* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **I** – Return to Main Menu<br>**A** – Checking<br>**B** – Savings/Money Market |
| Wait for processing | | • Start printing receipt if not OAR | • Targeted<br>• Teaser<br>• Receipt | |
| Which Account (OAR only) | *Press function key to select the accounts from and to* | • Format request for financial transaction | • Targeted<br>• Teaser | **A-D** contain a list of accounts |
| Wait for processing (OAR only) | | • | • Targeted<br>• Teaser<br>• Receipt | |

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| | | |
|---|---|---|
| On-Us - Another Transaction (New) | *Would you like another transaction?* | • If dialog ending (NO), display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then branch to the "How May We Contact" screen | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

**Check Re-order/Message (On-Us)**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Check re-order/Msg | *Press function key to confirm either a check re-order or a message is enclosed in envelope* | • Format request for PIN validation and financial transaction | • Targeted<br>• Teaser | **A** – Press if Correct<br>**B** – Return to Main Menu |
| Wait for processing | | • | • Targeted<br>• Teaser | |
| Insert Envelope | *Insert your sealed envelope into depository* | • | • Targeted<br>• Teaser<br>• Receipt | |
| On-Us - Another Transaction (New) | *Would you like another transaction?* | • If dialog ending (NO) display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then display the "How May We Contact" screen. | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

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**On-Us Request for Product Information**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| On-Us—Another Transaction (New) | *Would you like another transaction?* | • If request for product information (G,H, or I) then display "How May We Contact" screen | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |
| How May We Contact you? (On-Us only) (New) | *How May We Contact you?* | • Format and e-mail the How May We Contact request to the appropriate bank employee; include the customer's preferred contact method (E-mail, Phone, US Mail or Banking Center Appt) and customer profile information in the Lotus Note<br>• Format and print receipt related to topic of info request | • Targeted<br>• Teaser<br>• Receipt | **F** – By E-mail<br>**G** – By Phone<br>**H** – By US Mail<br>**I** – Banking Center Appt<br>**B** – Return to Main Menu |
| Confirm request and Another Transaction (New) | *We will contact you "today" via "e-mail"*<br><br>*Would you like another transaction?* | • Customized contact dialog based upon time of day and contact method chosen<br>• If dialog ending (NO), display "Closer" screen<br>• If request for another transaction (YES) then display On-Us Main Transaction Menu<br>• If request for Check Reorder then branch to the "Check Reorder" transaction flow<br>• If request for product information (G, H, or I) then branch to the "How May We Contact" screen | • Targeted<br>• Teaser | **F** – Check Reorder or Message<br>**G** – Mortgage Information<br>**H** – Investment Information<br>**I** – Earn $5, Banking Survey<br>**B** – Yes<br>**C** – No |

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**Acquirer Request for Product Information**

| Screen Name | Screen Dialog | Processing | Available Ad Type | Function Key |
|---|---|---|---|---|
| Acquirer—Another Transaction (New) | *Would you like another transaction?* | • If request for product information (G,H, or I) then display "Phone Number Entry" screen | • Targeted <br> • Teaser | **G** – Mortgage Information <br> **H** – Investment Information <br> **I** – Earn $5, Banking Survey <br> **B** – Yes <br> **C** – No |
| Phone Number Entry (New) | *Please enter your telephone number.* | • Format and e-mail the acquirer customer's name, bank and phone number to the appropriate bank employee <br> • Format and print receipt related to topic of info request | • Targeted <br> • Teaser <br> • Receipt | **A** – Correct <br> **B** – Change <br> **I** – Return to Main Menu |
| Another Transaction (New) | *Would you like another transaction?* | • Customized contact dialog based upon time of day and contact method chosen <br> • If dialog ending (NO), display "Closer" screen <br> • If request for another transaction (YES) then display On-Us Main Transaction Menu <br> • If request for Check Reorder then branch to the "Check Reorder" transaction flow <br> • If request for product information (G, H, or I) then branch to the "How May We Contact" screen | • Targeted <br> • Teaser | **G** – Mortgage Information <br> **H** – Investment Information <br> **I** – Earn $5, Banking Survey <br> **B** – Yes <br> **C** – No |

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## 4. Ad Selection Criteria

The Web ATM technology marries the two different systems of:

- State/screen-based technology used between the ATM and the Base24 system, and
- Client/server-based technology used by the Web ATM and the Web Server.

Non-Web ATM processing is *state* based in that the ATM or Host evaluates the current screen plus any customer input to determine the next action or the next display to present. With the advent of the Web ATM, each time the screen or state changes, we have an opportunity to invoke web-type services. The major web-type service we are implementing in the first phase involves using the ATM as an advertising billboard. The Web ATM administrator will have the ability to define specific ad content that:

- Positions ads in particular places on the ATM screen
- Plays ads at specific times before and during a customer session
- Select specific ads based on certain criteria that is a combination of the ATM, the customer, and the currently available content

The position of an ad is defined by the particular ad type (e.g., teaser ads play in the Banner zone). This is defined in section A.2. Controlling when ads start and stop is based on the state of the ATM (e.g., targeted ads start when the main menu is displayed. They stop when the transaction is completed). This is defined in section A.3. This section addresses how specific ads are selected.

The advertising content presented on the Web ATM can be specified at three different levels:

- Session Based – different ad content can be configured depending on whether or not the ATM is in use
- Customer Based – different ad content can be configured for different customer types
- Rules Based – overrides can be defined to alter the particular ad selection during a session

a) *ATM Ad Selection Process*

The Web ATM has two types of advertising "personalities" depending whether or not there is a customer session. When there is no card inserted into the ATM, the ATM's personality is defined strictly by its "market class". The market class of an ATM is a factor of its geography (e.g., Bay Area), its market location (e.g., In Store-Luckys), and its capabilities (e.g., Web ATM). The Market Class personality defines the specific content of the Background and Main Ad visual zones. For example, the Background content could be a co-branded look when the ATM is in-store. The Attract Ad in the Main Ad zone could be playing a regionally targeted ad that varies depending on geography. The Administrators will have the ability to configure the Market Class of the ATM and its relationships to advertising content.

After an ATM is brought up, it will query the Web Server. The Web server will:

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~~final.docd:\annnelson\web atm brd fdd 10-07-99.doc~~

- Retrieve the Market Class of the ATM
- Use the Market Class to obtain the ad name that has a *Background* ad type (this association is described in section B)
- Serve up the graphics file that is specified by that ad name
- Use the Market Class to obtain the ad that has an *Attract* ad type
- Serve up the graphics file that is specified by that ad name
- Use the Market Class to obtain the ad that has a *Teaser* ad type
- Serve up the graphics file that is specified by that ad name

Those three ad types will continue to play on that ATM until a customer inserts his/her card. Whenever the customer session is over (i.e., the card is removed), the Web ATM will begin to play the three ad types again.

If there is more than one ad that satisfies any of the retrievals, the Web Server will invoke override processing (see below). If no ad is specified, the default Market Class (i.e., *None*) will be used. These ads will play until a customer session is started.

b)  *Customer Ad Selection Process*

After the customer has been identified, the ATM will change personality based on customer information. The goal is to differentiate the customer experience at the ATM based on their banking relationship. The Background and advertising content may be tailored to the customer. During transaction processing, a customer specific Targeted Ad will play. Customer differentiation is based on different criteria. The advertising content for a Bank of America customer can be specified at three levels:

- *BofA Card Number* – the Web ATM administrator has the ability to define the advertising content by specific card number. This is envisioned like a telemarketing campaign where specific customers are targeted for specific products
- *Customer Segment* – if this customer's card number is not defined on the Web ATM database, the customer *segment* will be used. The customer segment types are Basic, Associate, High Value, Plus, Premier, and Private.
- *Default On-Us* – if the customer segment is unavailable, the Web ATM will use default advertising material.

For acquired, or not-on-us, customers, the Web ATM supports two levels of differentiation:

- *Card Prefix* – Advertising content can be specified by the Bank ID number. For example, Wells Fargo or First Union customers can be targeted for specific ad content.
- *Acquirer Default* – If the card prefix value is not found on the Web ATM database, or the card used is a credit card, the Acquirer Default content will be used.

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The system will determine the customer profile by using the following algorithm:

1. If the card is proprietary then
   a) look up in user-supplied customer lists – if found use that value
   b) else get customer segment value – if available use *segment value*
   c) else use *Proprietary Default*

2. If the card is not-on-us then
   a) look up in the card prefix database – if found use that value
   b) else use *Acquired Default*

Once the Customer Profile is known, the Web ATM will use similar processing to select the specific ads for play as it used in the Out of Session processing:

- Use the Customer Profile to obtain the ad name that has a *Background* ad type (this association is described in section B)
- Serve up the graphics file that is specified by that ad name
- Use the Customer Profile to obtain the ad name that has a *Targeted* ad type
- Serve up the graphics file that is specified by that ad name
- Use the Customer Profile to obtain the ad name that has a *Teaser* ad type
- Serve up the graphics file that is specified by that ad name
- Use the Customer Profile to obtain the ad name that has a *Closer* ad type
- Serve up the graphics file that is specified by that ad name. Note that the closer will not be played until the Closer screen is presented.
- Use the Customer Profile to obtain the ad name that has a *Receipt* ad type
- Serve up the graphics file that is specified by that ad name. Note that the receipt ad content will not be printed until the Closer screen is presented.

If there is more than one ad that satisfies any of the retrievals, the Web Server will invoke override processing (see below). If no ad is specified, the defaults will be used. These ads will play until the customer session is completed.

Rev # 1                    Page 39 of 66166+                    Last Revised: 6/8/2006
11:53:00 AM10/7/1999 7:58 PM10/07/99 7:19 PM09/28/99 4:32 PM
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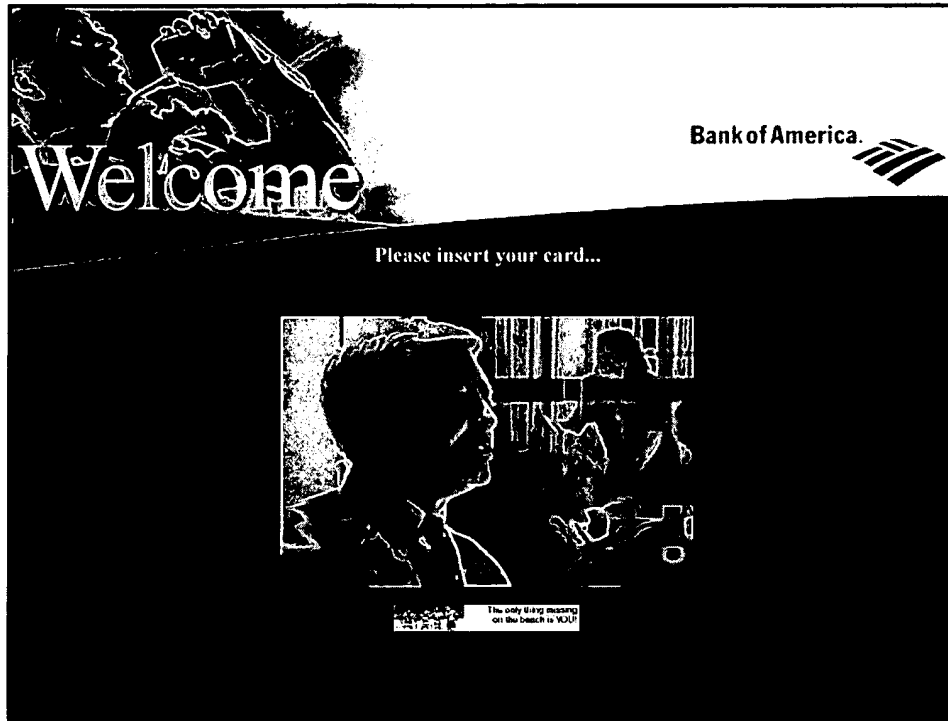
c) *Overrides*

There are three different ways the defined advertising selection can be altered dynamically. These exclusions only go into affect when there are multiple ads defined for a particular customer profile.

- *Priority* – When an Ad is defined for a customer or customer segment, it also has a *relative priority*. This priority is used to determine which ad will play.
- *Exclusion* – Ads may have assigned product attributes. Such as a Gold Visa ad may be assigned the Visa product attribute. The customer product set will be evaluated and any ads that the same product attribute as the customer will be excluded from play.
- *History* – If there are multiple ads defined for this customer, the system will check history and play the least viewed ad based on priority.

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11:53:00 AM~~10/7/1999 7:58 PM10/07/99 7:19 PM09/28/99 4:32 PM~~
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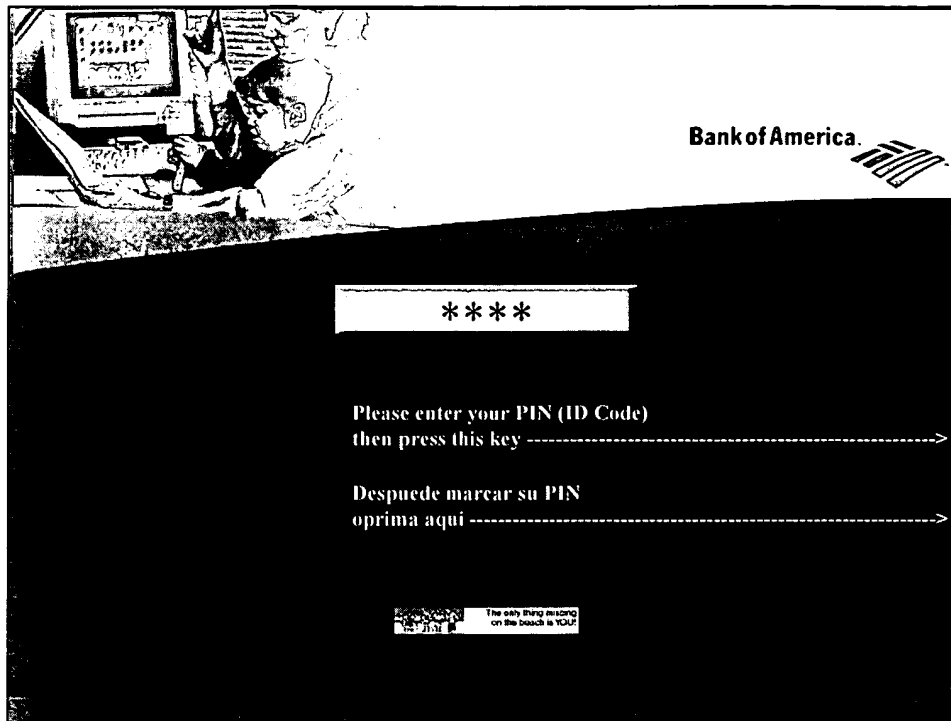
## 5. Cash Withdrawal and Investment Information Request

The following screen set illustrates:
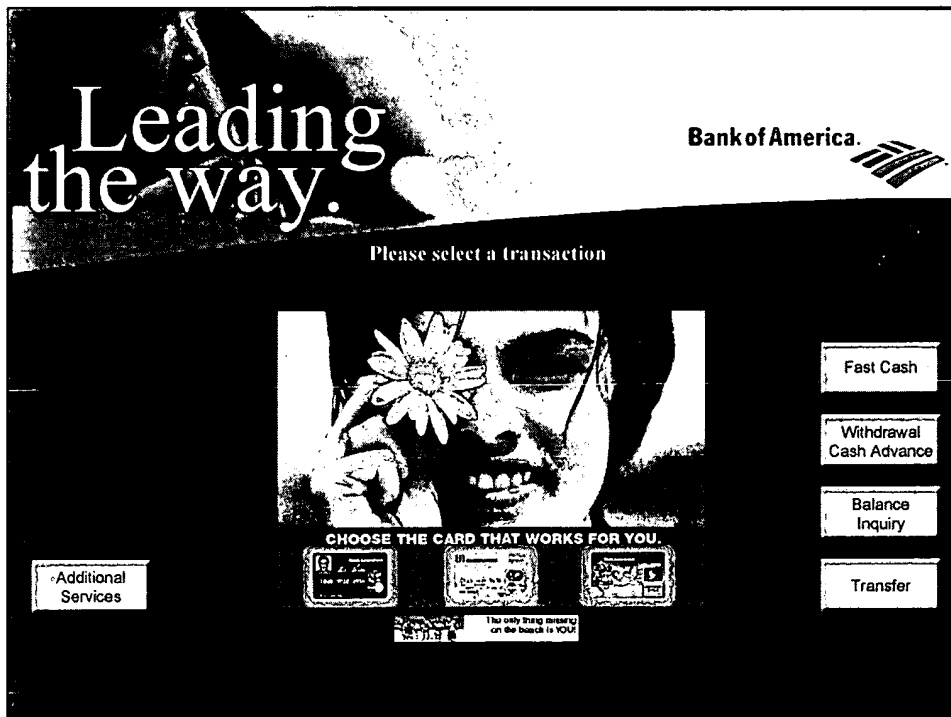- Acquirer Cash Withdrawal transaction screen flow and
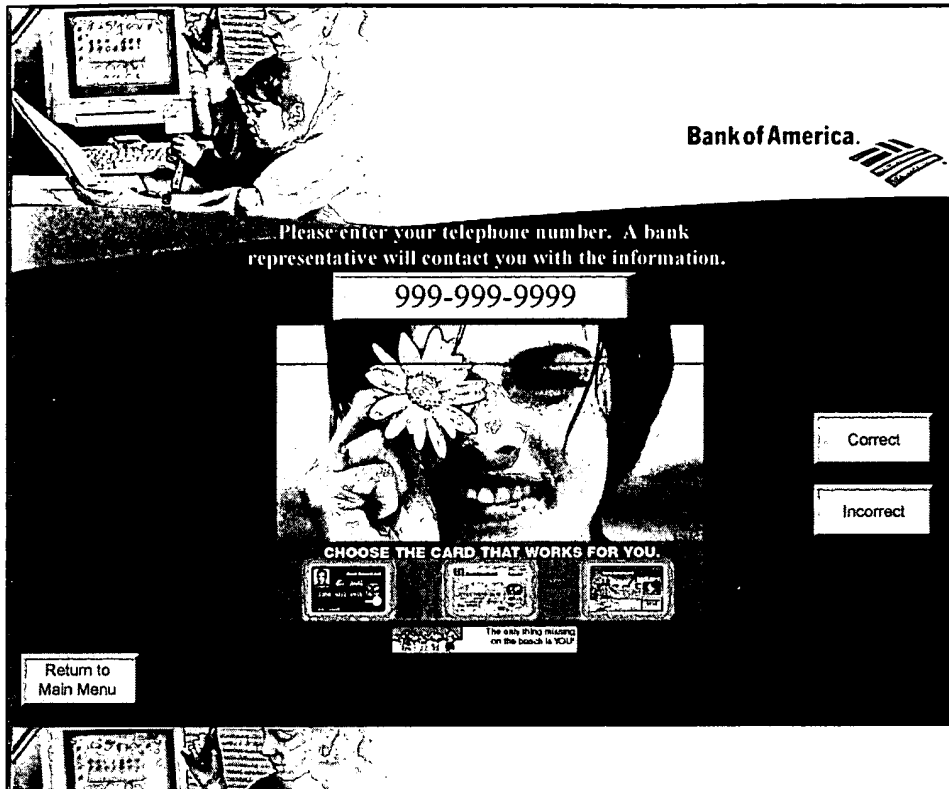- Request for Investment Information transaction screen flow



**Attract Loop**

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PIN and
Language
Entry



Acquirer
Main Menu:

Transaction
Selection

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11:53:00 AM~~10/7/1999 7:58 PM10/07/99 7:19 PM09/28/99 4:32 PM~~
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final.doc~~c:\documents_and_settings\nbktl2v\local_settings\temporary_internet_files\olka7\web_atm_brd_fdd~~
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**Amount
Entry**



**Select an
account**

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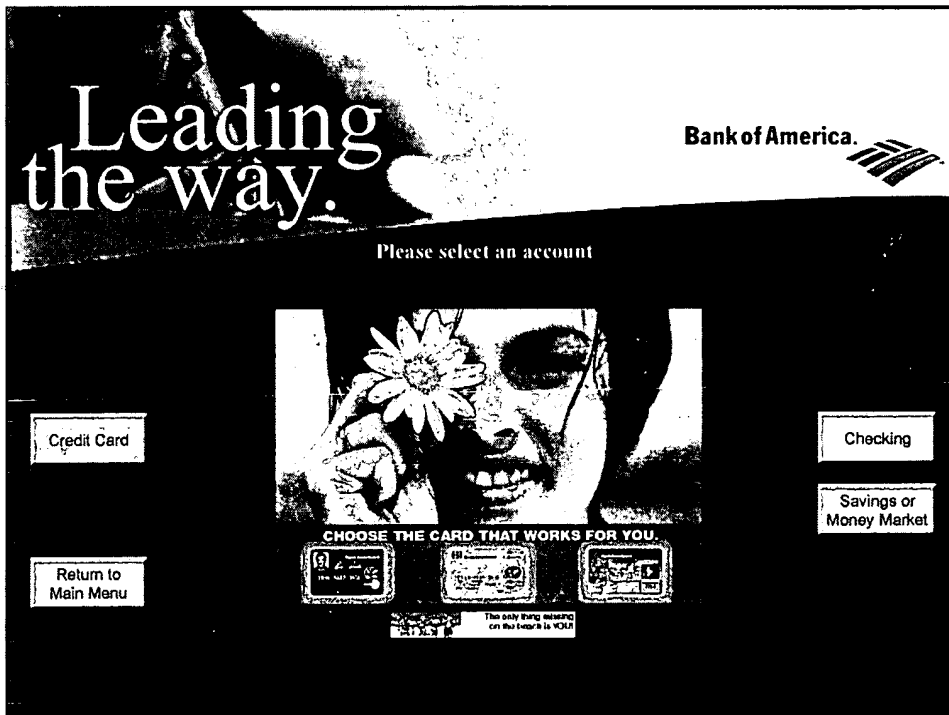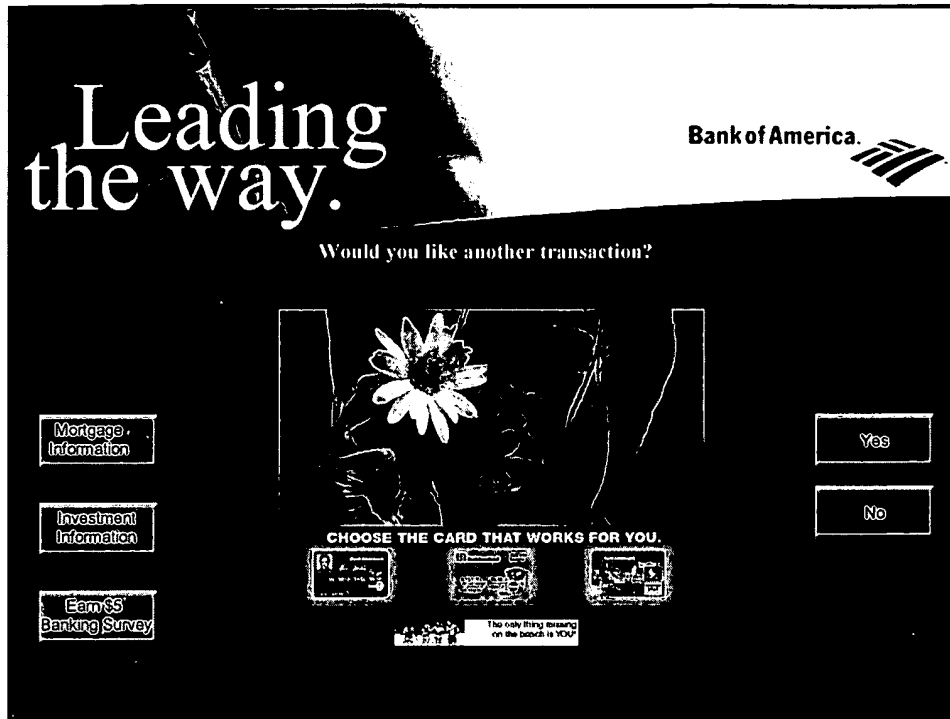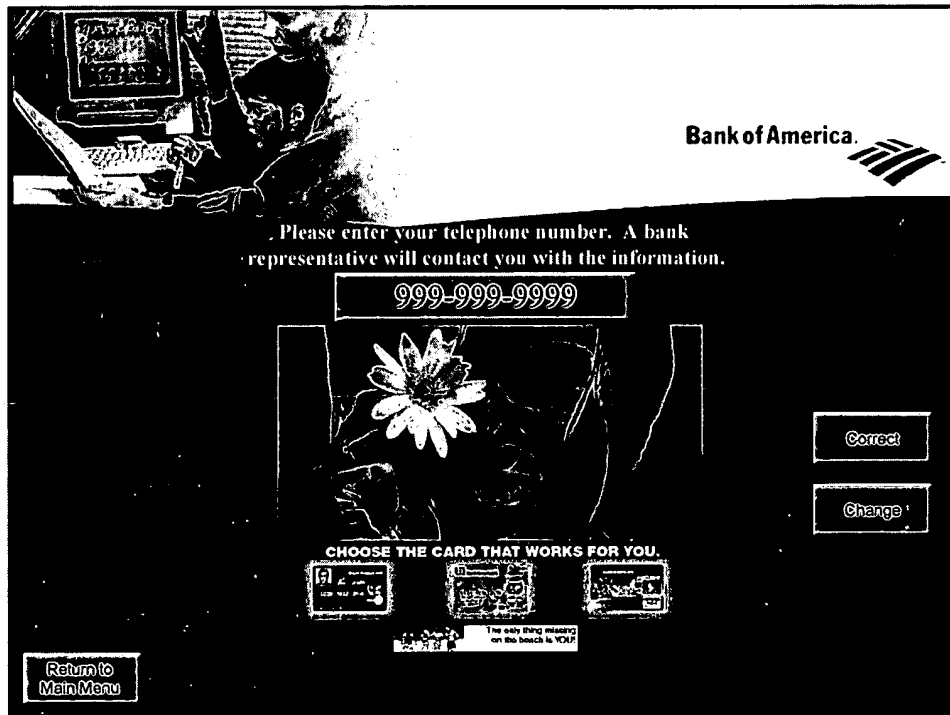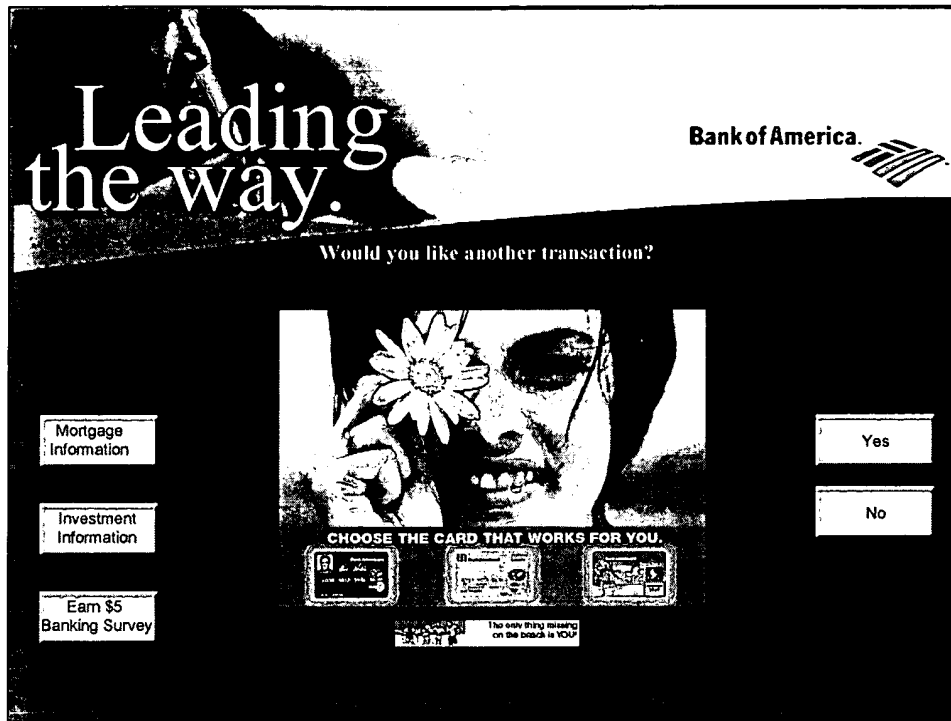
Would you
like another
transaction?

Investment
Info chosen

Note:  The
format of
this screen
will be
changing,
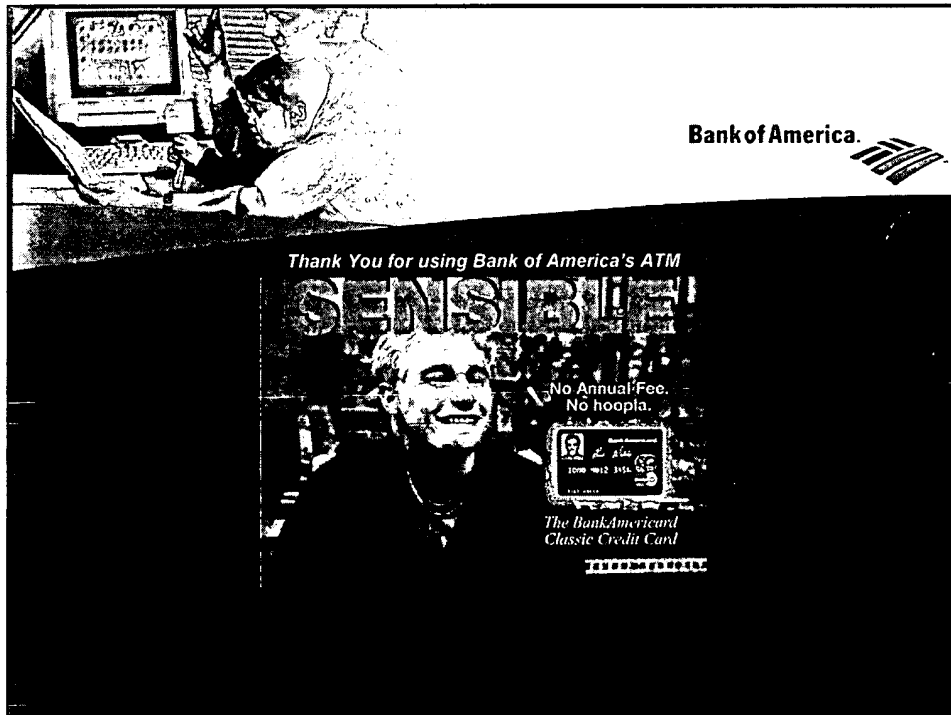but the
general
content will
stay the
same.



Phone
Number
Entry

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final.doc~~c:\documents and settings\nbktl2v\local settings\temporary internet files\olka7\web atm brd-fdd~~
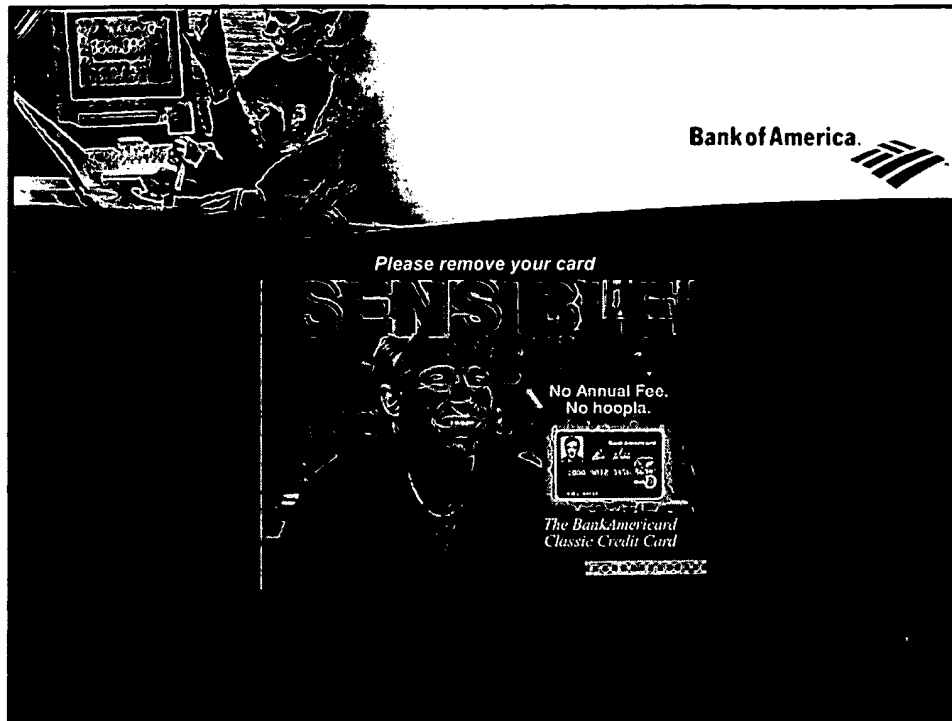~~final.docd:\amnnelson\web atm brd fdd 10 07 99.doc~~

Would you
like another
transaction?

"No" Chosen

<u>Note: The
format of
this screen
will be
changing,
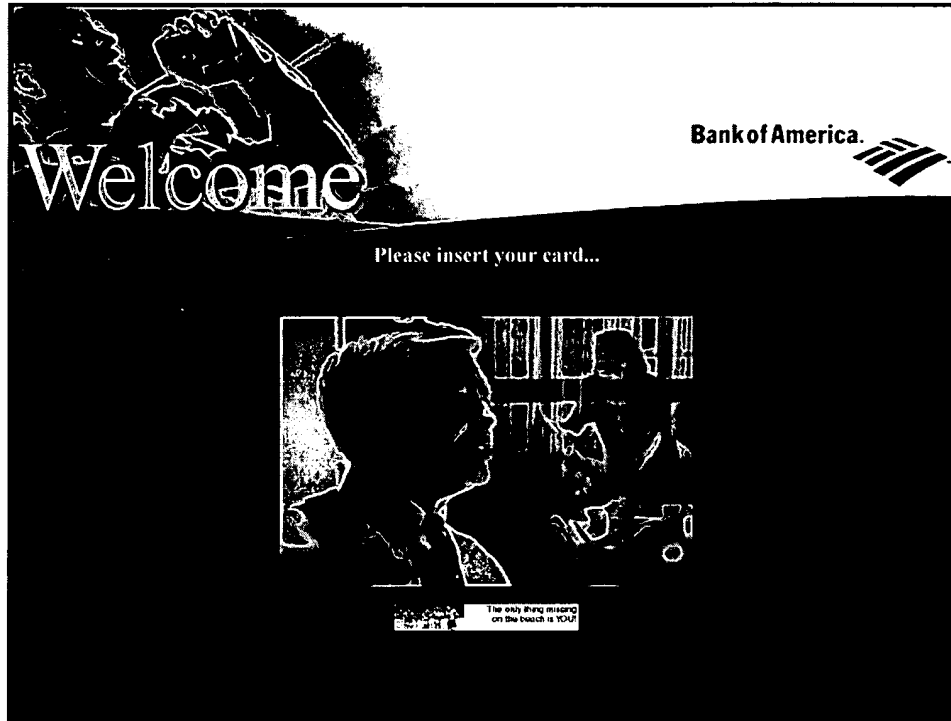but the
general
content will
stay the
same.</u>



Thanks

Rev # 1                          Page 45 of 66~~166~~~~1~~                    Last Revised: <u>6/8/2006</u>
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Take your
card

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11:53:00 AM ~~10/7/1999 7:58 PM10/07/99 7:19 PM09/28/99 4:32 PM~~
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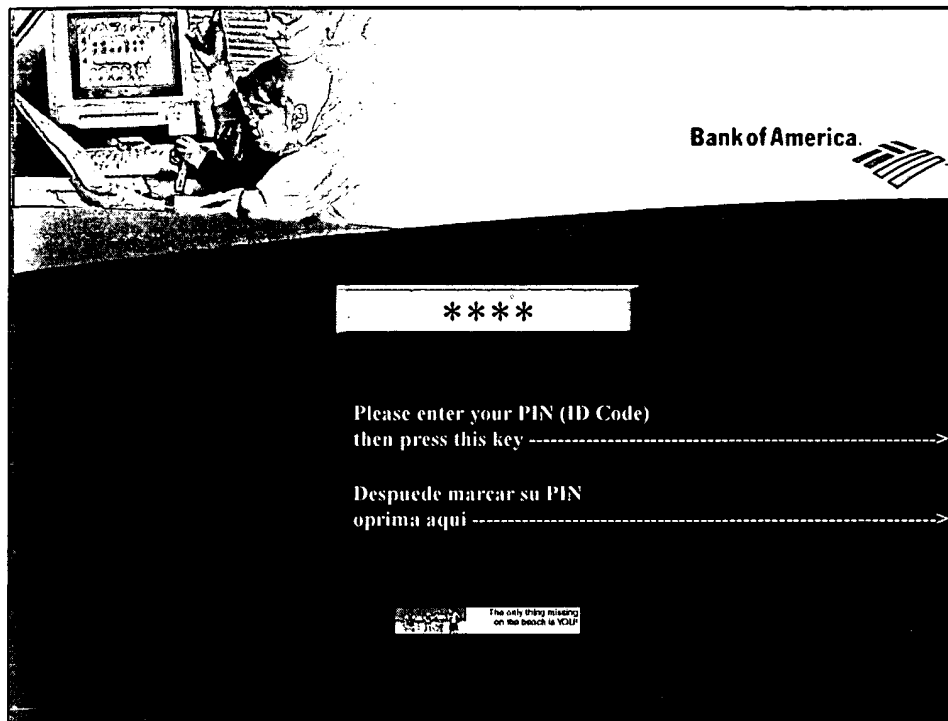~~final.docd:\annnelson\web-atm-brd-fdd-10-07-99.doc~~

## 6. Deposit and Mortgage Information Request
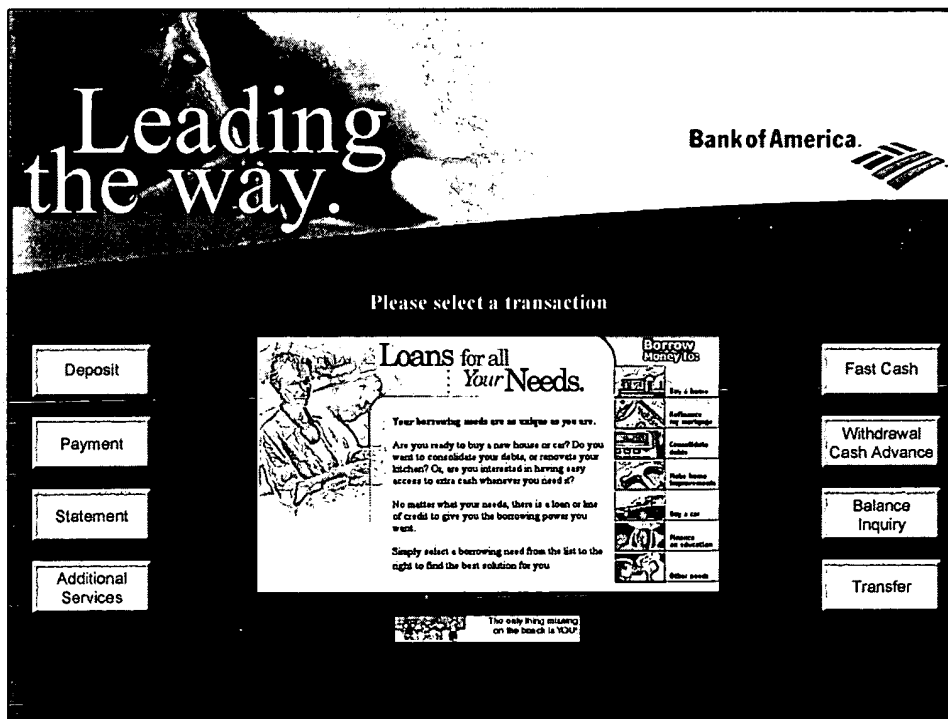
The following screen set illustrates:
- On-Us Deposit transaction screen flow and
- Request for Mortgage Information transaction screen flow
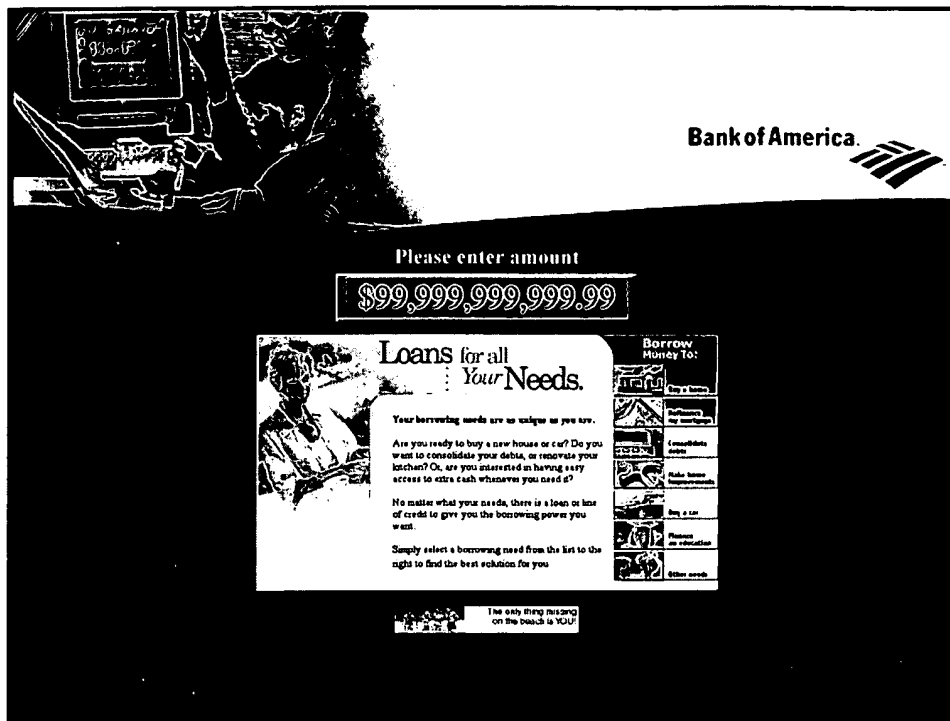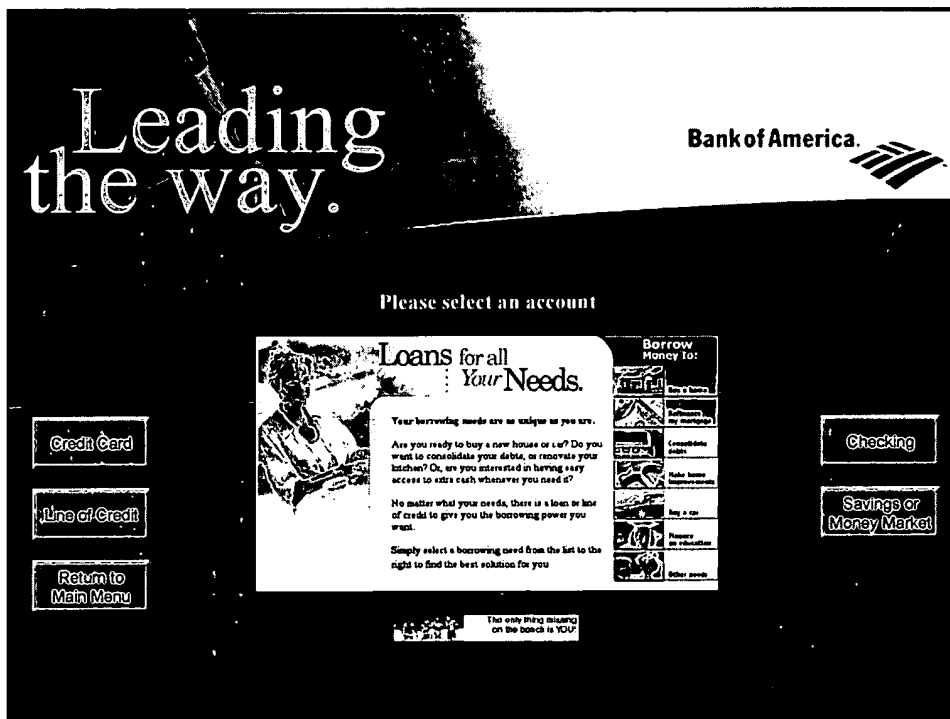


**Attract Loop**

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PIN and
Language
Entry

On US Main
Menu:

Transaction
Selection

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11:53:00 AM~~10/7/1999 7:58 PM10/07/99 7:19 PM09/28/99 4:32 PM~~

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**Amount Entry**



**Select an account**

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**Would you
like another
transaction?**

**Mortgage
Info chosen**

<u>Note: The
format of
this screen
will be
changing,
but the
general
content will
remain the
same.</u>

**How may we
contact you
with product
information**

**E-mail
chosen**

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~~final.docd:\annnelson\web-atm-brd-fdd-10-07-99.doc~~
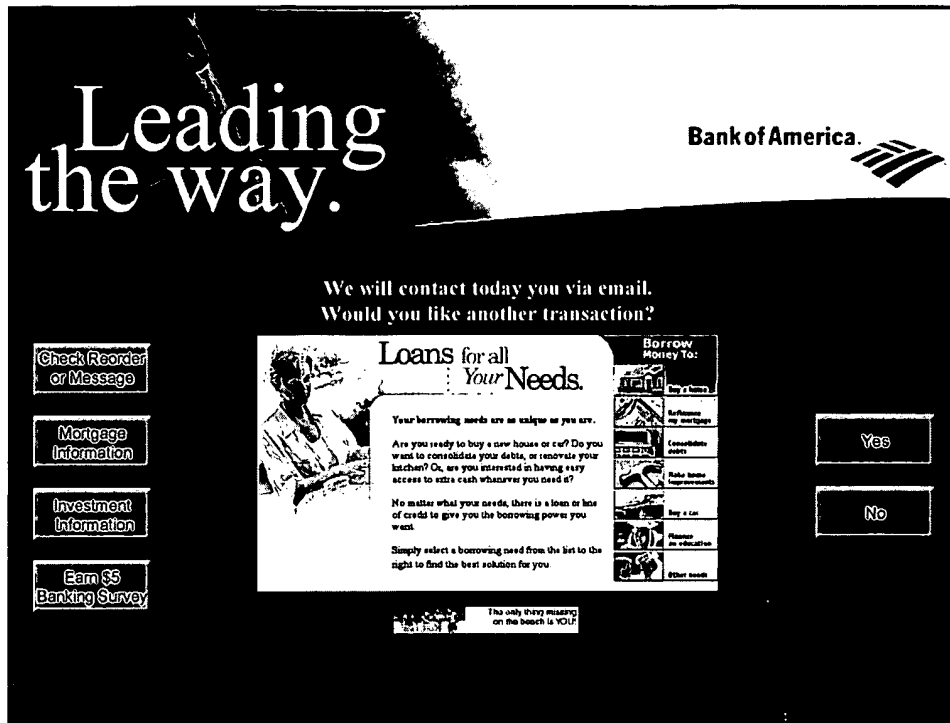
**Confirm request**

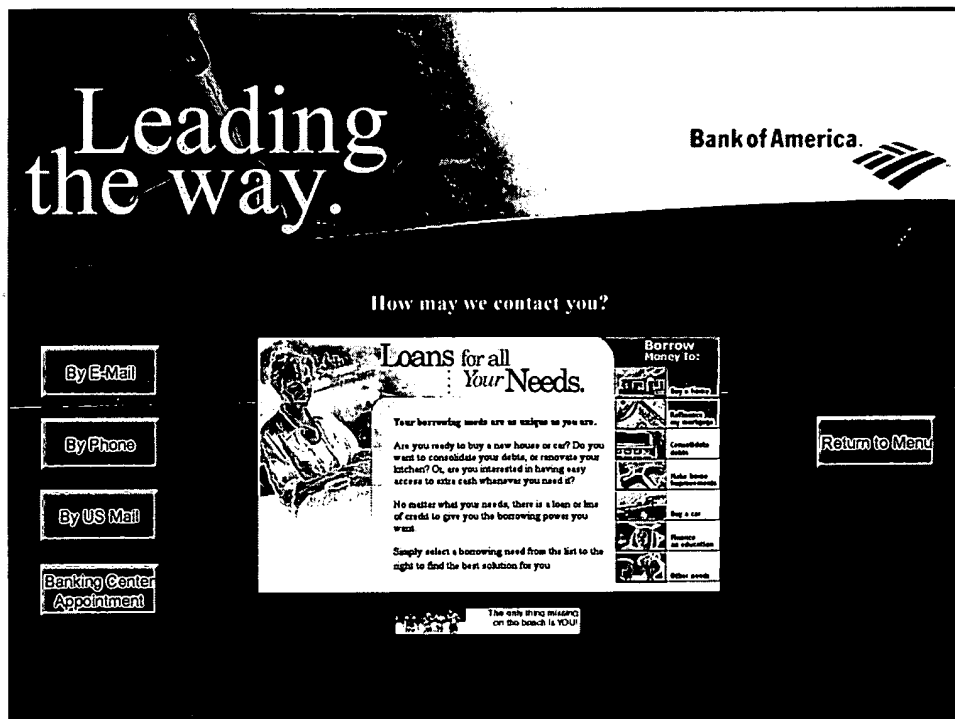**Would you like another transaction?**

**"No" chosen**

**<u>Note: The format of this screen will be changing, but the general content will remain the same.</u>**



**Thanks**

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**Take your card**

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11:53:00 AM~~10/7/1999 7:58 PM~~~~10/07/99 7:19 PM~~~~09/28/99 4:32 PM~~
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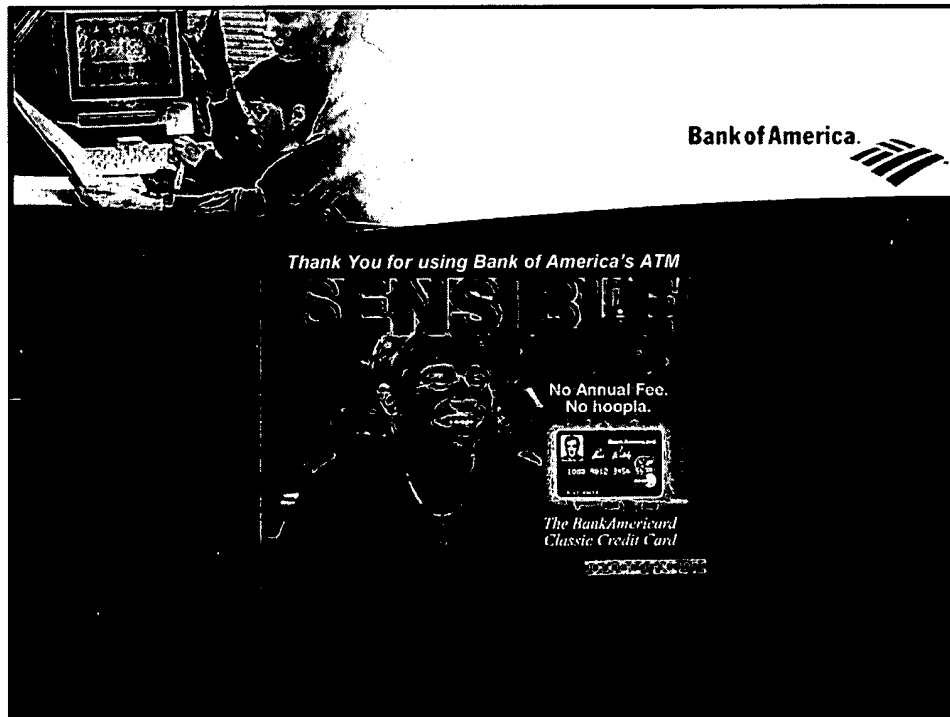
## 7. Mortgage Information Request Contact E-mail

The following is an example of the e-mail that will be automatically generated by the Mortgage Information Request transaction. Note that information about the product the customer was interested in may be attached to the note if the email address the note was sent to is accepting requests for information on more than one type of product.


**Bank of America**

From:   ATMServer on 08/16/99 14:42

To:     Mort.Marketing@bankofamerica.com
cc:
Subject: ATM Customer Request for Info

The following customer has requested via ATM to be contacted
by Bank of America with more information about Mortgages.

| | |
|---|---|
| **Contact By**: | E-mail |
| | |
| **Customer Name**: | Jack Teagarden |
| **Address**: | 200 S. College St. |
| **City**: | Charlotte |
| **State**: | NC |
| **Zip**: | 28255-0001 |
| **Phone**: | (704) 388-1234 |
| **E-mail**: | Teagarden@aol.com |
| | |
| **Customer Segment**: | Premier |
| **Customer Accounts**: | 12345676890 |
| | 10101010101 |
| | |
| **Request Date/Time**: | 08/16/99 14:40 |
| **ATM Number**: | SNCN9002 |

## 8. Mortgage Information Request Receipt

The following is an example of the receipt that will be automatically generated by the Mortgage Information Request transaction:

```
0123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

                  FOR CUSTOMER SERVICE CALL 1-800-333-6262

      USE YOUR ATM OR CHECK CARD AT OVER 14,000 ATMS


08/23/99    14:39    *OVERSTREET MALL    CHARLOTTE NC
CHECKING WITHDRAWAL          $300.00 FROM CHECKING
BALANCE      $506,065.92

SNCD1641                XXXXXXXXXXXXX5555          SER. NO. 1234
```

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## B. Configuring Web ATM Ads

This section specifies how the administrator configures and coordinates the advertising material with the customer experience. There are several functions required to set this up:

- *Campaign Profile Definition* – establishing and defining the attributes of a marketing campaign

- *Ad Profile Definition* – establishing and defining the attributes and relationships of specific graphics files

- *Customer Profile Definition* – establishing and defining customer *types* to the system

- *User Supplied Profile Files* – files containing card numbers or prefixes for specific market segments of customers

- *Linking Customer Profiles to Ads* – establishing the relationships between customer types and session-based advertising content

- *Linking Market Classes to Ads* – establishing the relationship between specific ATMs and non-session based advertising content.

The following diagram illustrates the Web Server Ad Database:



```
Campaign  <-->  Ads  <--  Link  -->  Customer Profile    •None
                 •Attract       |                         •Default
                 •Target        |                         •Segment
                 •Closer        v                         •User Supplied
                 •Teaser       ATMs
```

KEY = Card Number + Customer Profile
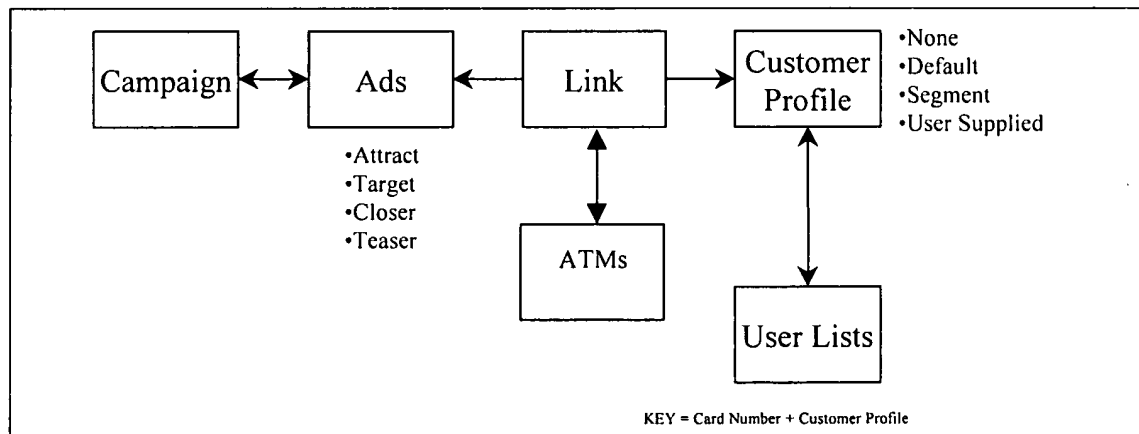
## 1. Campaign Profile Definition

A marketing *campaign* is the term used to describe a set of advertising content that has been targeted to a specific group of customers. A Campaign can reference all types of Ads.

The fields used in a campaign definition are:

- *Campaign Name* – the user provided name for this campaign

- *Description* – text that describes this campaign

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- *Effective Start* – the date/time that the campaign should be used in production

- *Effective End* – the date/time that the campaign should not be used in production

- *Relative Priority* – the priority this campaign has relative to other active campaigns. This element is used when multiple campaigns are active and the customer or ATM qualifies for more than one campaign

## 2. Ad Profile Definition

An ad refers to any advertising content that will be presented to the customer.
The fields used in an ad profile definition are:

- *Ad Name* – the user provided name for this ad

- *Ad Description* – text that describes the ad such as content, play time, etc.

- *Ad Type* – the type of ad. Types are:
  - *Background*
  - *Attract*
  - *Targeted*
  - *Closer*
  - *Teaser*

- *Campaign Associations* – name(s) of the campaign(s) that this ad should be associated with. An ad can belong to one or many different campaigns. The system will provide a list box of all active or future campaigns

- *Product Categories* – the name(s) of the banking products that this ad should be associated with. An ad can be associated to none or many different products. This element is used in exclusion processing.

- *File Name* – the name of the file containing the ad content

## 3. Customer Profile Definition

Customer profiles are ways to categorize Web ATM users in various ways. The system will provide an initial set of customer profiles that correspond to the different customer segment values. The administrator will also be able to define special customer profiles by either providing a file containing specific card numbers or by providing a file containing Card prefix values.

- *Customer Profile ID* – the name of this customer profile. The system will provide several standard customer profiles

- *Profile Type* – defines the processing used by the system. Values are:
  - *None* – used when there is no customer
  - *Proprietary Default* – used when BofA customer information is unavailable.
  - *Acquired Default* – used for not-on-us customers
  - *Customer Segment* – use the value contained on the CIF (e.g., *PLUS*)

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- *Market Set* – use the Web ATM database of BofA card numbers
- *Card Prefix* – use the not-on-us Card prefix database

# 4. User-Supplied Customer Lists

As stated above, the marketing groups can load card numbers or card prefixes into the Web ATM database. The user-supplied record contains the following data elements:

- *Card Number or Prefix* – the card number or card prefix containing up to 16 numeric characters. Acceptable wild cards are % for any number of characters or # for single character substitution

- *Customer Profile ID* – the user defined customer profile value that matches one defined within the Web ATM customer profile database

- *Effective Start Date* – the date when the system should use this entry

- *Effective Stop Date* – the expiration date of this entry – i.e., when it should be removed from the database.

# 5. Linking Ads to Customer Profiles

Once the Ads and the Customer Profiles have been defined to the system, the administrator can then make the association between the ad and the customer profile. This is the mechanism to define which ads play during a customer session.

The administrator first selects the particular customer profile. Next the campaign is selected. Finally, the linkages between a specific customer profile and a specific ad are made. The administrator may select multiple ads for a particular customer profile, but if there are multiples, then the administrator must set the relative priority.

The fields used on this form are:

- *Customer Profile ID* – the value of a defined customer profile. The system provides a list box of all customer profiles for the user to select. Multiple customer profiles may be selected

- *Campaign* – the value of a defined campaign. The system provides a list box of the valid (i.e., non-expired) campaigns for the user to select. Multiple campaigns can be selected.

- *Ad Type* – the type (e.g., background, targeted, teaser) of the ad. This is a protected field.

- *Ad ID* – the ID of the Ad that the user wants to link to this set of customer profiles.

- *Relative Priority* – the order this ad should play relative to other ads defined for this customer profile and ad type

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## 6. Linking Ads to Market Classes

We also want to be able to define the ads that play when there is no customer session. Defining the "attract" ads or "teaser" ads that are presented while the Web ATM is inactive uses the same process as linking customers to ads. When ATMs are defined to the system, they are also a given "market class". The market class is a way to specify that the ATM has specific business arrangement (e.g., Lucky's), has a specific location (e.g., Bay Area), has a specific capability (e.g., Web ATM), or any combination of the three. Today we use market class to determine the set of graphics that the ATM will receive. With the Web ATM, the market class specifies the ads that will play when there is no customer session.

To define the ad association, the administrator must have added the market class to the Customer Profile table (see section B.3). Then the administrator uses the same linkage capability referenced in section B.5 to assign a set of ads to the market class.

## 7. Pilot Advertisement Configuration

The following matrix represents the advertising components that will be built based upon Customer Profile. In order to keep the administration of ads manageable in the Pilot timeframe, only one targeted ad per customer is recommended.

| Customer Profile | Ad Type | Ad Name | Backgrounds |
|---|---|---|---|
| Non-Specific | • Attract <br> • Teaser | • Banking Center Ad <br> • Teaser1 | Background1 |
| • Proprietary Default <br> • Basic <br> • Plus <br> • Associates | • Targeted <br> • Closer | • Target1 <br> • Closer1 | Background1 |
| • Premier <br> • Private | • Targeted <br> • Teaser <br> • Closer | • Target2 <br> • Teaser2 <br> • Closer2 | Background2 |
| Targeted Acquirer | • Targeted <br> • Closer | • Target3 <br> • Closer2 | Background1 |
| Acquirer Default | • Targeted <br> • Teaser <br> • Closer | • Target4 <br> • Teaser3 <br> • Closer1 | Background1 |

## C. SYSTEM MANAGEMENT

The implementation of the Web ATM implies that additional system and network management functions must be developed to ensure the availability of the ATM features and functions. Two operational areas are affected:

* System Monitoring
* Software and Content Distribution

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# 1. System Monitoring

Three components are affected by the Web ATM project that require enhancements to the monitoring tools:

- ATM – the Web ATM will need to alert operations whenever there is a loss of service by the Web Server. This will require a new unsolicited event that will be sent by the ATM to the Base24 Device Handler

- Web Server – the new Web and Application server components must also be monitored by the system. These components include the Web Server pathway, the server processes, and the TCP/IP communication layer. The monitoring systems must be able to recognize and act on these new events.

- MQ – the Web Server will access mainframe services via the Message Queuing (MQ) interface. Operations will need to monitor these processes and communication links.

# 2. Software Distribution

The Web ATM requires that certain software be resident on the ATM itself. In addition, there will be graphic files present on the ATM to avoid the performance impact of moving large files across the network during customer interaction. We will develop the processes and procedures to distribute both software and graphical files to the Web ATMs. At a minimum, we must be able to:

- Maintain the inventory of software and graphics resident at each ATM

- Automatically distribute and install new software and graphics to one, a group, or all Web ATMs

- Back-out any changes at the Web ATM

- Status the Web ATM concerning the current complement of software and graphics file versions

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## D. TEST OBJECTIVES

**Note:** The Test Objectives, Conditions, Data Requirements, Cycle Requirements and Risk sections of this document will be filled out at a later date.

| Objective Number | Obj Short Desc | Obj Description | Application | Function Code | Initiative | Keywords | Last Used On | Project Phase Description |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

## E. TEST CONDITIONS

| Related Obj Number | Condition Number | Cond Short Desc | Cond Description | Application | Function Code | Keywords | Last Used On | Project Phase Description |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

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## F. TEST DATA REQUIREMENTS

### 1. States to be tested

### 2. Data Requirement 1

    a) Data Type Description

    b) Requirement

### 3. Data Requirement 2...

## G. CYCLE REQUIREMENTS

### 1. Cycle Requirement 1

    a) Cycle Description

    b) Requirement

### 2. Cycle Requirement 2...

## H. TESTING RISKS

### 1. Testing Risk 1

### 2. Testing Risk 2...

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## V.    ASSUMPTIONS

| | Assumption | Confirmed by |
|---|---|---|
| 1. | Financial transaction receipts will print with current Model standards. | |
| 2. | Web ATM components will function with Model Base24 Device Handlers. | |
| 3. | No software changes will be required to the Base24 Driving platform for Pilot Phase I other than: the TCP/IP Protocol support, the handling of new unsolicited ATM status messages about problems concerning Web access, and the translation of status bytes. | |

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## VI.  OPEN ISSUES

| | Issue | Status | Responsibility | Target Date |
|---|---|---|---|---|
| 1. | Is it required for the Web Pilot that ATM cameras take photos of transactions (from the data stream) and superimpose them on the photo of the customer? (Do cameras in the East do this now?) If so, changes from multiple camera vendors are required to implement this because the current system does not support TCP/IP. **Resolution: Avoid using cameras until a corporate direction is established.** | Closed | Pete Abowd | 09/30/99 |
| 2. | Will rear-load ATMs will be included in the Pilot mix?  If so, one needs to be installed in the development lab. **Resolution: Yes** | Closed | Pete Abowd | 09/30/99 |
| 3. | What denominations is the pilot web ATM required to support? **Resolution: $20** | Closed | Greg Borchardt | 09/30/99 |
| 4. | Which transactions will unconverted Bank of America customers receive, and what targeted ads (if any)? **Resolution: Acquirer** | Closed | Greg Borchardt | 09/30/99 |
| 5. | Should the Language and Pin Entry screens for Web Pilot be merged (as the examples in this document currently show) or split? **Resolution:  Merged** | Closed | Greg Borchardt | 09/15/99 |
| 6. | The "Another Transaction?" screen features the new Web information request functions in addition to the traditional yes/no keys.  Should those new functions be included on that screen? **Resolution:  Keep the Web Additonal Services but re-design the screen format so that it is more clear to the customer what to -do next.** | Closed | Greg Borchardt | 09/30/99 |
| 7. | What to do with the Message the Bank and Check Reorder functions for the Pilot? Traditional Model ATM may remove it from the menu—should Web ATM do the same?  Or, Deluxe needs to be contacted to explore the possibility of electronically transmitting check reorders from the ATM directly to the company. Can this be done in time for the Pilot? **Resolution:  Since Check Reorder cannot be automated within the Phase1 timeframe, and since it, along with Message to Bank, will probably be removed from traditional ATM** | Closed | Greg Borchardt, Anne Zeller | 09/30/99 |

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| | | | | |
|---|---|---|---|---|
| | menus, it should be removed from the Web menu as well (as long as it is also removed from the traditional menus). | | | |
| 8. | Should we use the Track 1 Name in the screen dialogue? The accuracy of the name field in Track 1 data for both proprietary and acquired cards needs to be investigated. Additionally, are there security reasons why Customer Name should not appear on the screen? **Status:** Don Schonder states that the Track 1 name is not very accurate. Also, the Bank's "Privacy Expert" recommends using only the first name on the ATM screen. More discussion on which name and where is needed. | | ~~Bruce Nicoll~~Greg Borchardt | 09/30/99 |
| 9. | Can the infrastructure be built to send specific customers individual messages in time for the Pilot? Can the IBD messaging technique be used? **Resolution:** No | Closed | Anne Zeller | 09/30/99 |
| 10. | What is the set of advertising for the Pilot (the Pilot Advertisement Configuration matrix in the functional specification may be used as a starting point)? **Status:** Targeted for completion in October | | Greg Borchardt, Faith Tucker | 09/30/99 |
| 11. | Who will be the "Advertisement Administrator(s)", the main user(s) of the Advertisement subsystem? **Resolution:** Faith Tucker has agreed to assume this role for the pilot. | Closed | Greg Borchardt, Faith Tucker | 11/15/99 |
| 12. | The Hardware requirements to support the Web pilot must be specified. **Resolution:** Done and distributed by e-mail. | Closed | Greg Borchardt | 09/30/99 |
| 13. | Are there any MIS reports desired from the Web transaction logs or Advertising database? **Status:** Bill Nash will followup. | | Borchardt, Tucker | 10/31/99 |
| 14. | Can the settlement mechanism for items sold at the ATM (i.e., phone time) be put into place for Pilot Phase 1? **Resolution:** No—will be in a future release. | Closed | Zeller | 09/30/99 |

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## VII.  INDIVIDUALS INVOLVED

| Area of Responsibility | Individual Name | Phone | Sign-off |
|---|---|---|---|
| ATM / Debit Card Project Management | Nash, Bill | 925-675-3945 | |
| ATM Architecture | Dwyer, Larry | 925-692-8298 | |
| ATM Architecture | Nicoll, Bruce | 704-386-9456 | |
| ATM Architecture | Zeller, Anne | 925-675-1809 | * |
| ATM Management and Development | Borchardt, Greg | 415-436-5173 | |
| ATM Management and Development | Raymond, Bill | 415-436-5161 | * |
| ATM Management and Development | Tucker, Faith | 316-261-4179 | |
| ATM/POS/Monitoring Systems | Clark, Adam | 704-388-5943 | |
| ATM/POS/Monitoring Systems | Evans, Roy | 925-675-2706 | |
| ATM/POS/Monitoring Systems | Fei, Calvin | 925-675-2619 | |
| ATM/POS/Monitoring Systems | Gilbert, Mark | 404-331-8130 | * |
| ATM/POS/Monitoring Systems | Givot, Marty | 925-675-3223 | |
| ATM/POS/Monitoring Systems | Jacobs, George | 925-675-2217 | |
| ATM/POS/Monitoring Systems | Liuzzi, Frank | 704-386-7269 | |
| ATM/POS/Monitoring Systems | Martin, Marsha | 505-282-5124 | |
| ATM/POS/Monitoring Systems | Nelson, Ann | 925-675-3671 | |
| ATM/POS/Monitoring Systems | Schwappach, Michele | 505-282-4229 | |
| ATM/POS/Monitoring Systems | Stockton, Mark | 925-675-3301 | |
| ATM/POS/Monitoring Systems | Weatherford, Pam | 704-386-9306 | |
| ATM Debit Card Operations | Abowd, Peter | 415-241-4335 | * |
| Bank Workflow/Product Integration (Service Broker Systems) | Campbell, Terry | 704-386-3307 | |
| Business Opportunity Analysis | Bush, Jason | 704-388-5116 | |
| DATC-East | Goldsmith, Jonah | 704-387-0731 | |
| Distributed Architecture | Winter, Chuck | 704-388-2881 | |
| Distributed Security | Coleman, Andrea | 214-508-5106 | |
| Electronic Business Development | Bridges, Eileen | 704-388-5148 | |
| IBM – Development | Shimizu, Mike | 416-956-7816 | |
| IBM-Marketing | Milette, Gary | 514-916-8143 | |
| IBM-Project Management | Risto, Steve | | |
| IEC Lab | Goldinger, Bruce | 704-386-1899 | |
| IEC Stragegy Development Technology | Gowin, Chuck | 704-388-1070 | |
| IS/S Channel Technology | Alvich, Tom | 704-388-7037 | * |
| IS/S Channel Technology | Egerland, Robert | 704-386-3932 | |
| IS/S Channel Technology | Kaufmann, Steve | 704-388-5658 | |
| IS/S Channel Technology | Lambert, Chris | 704-595-3429 | |

A * mark in this box indicates the individual or empowered designee is
required at validation to sign-off the document.

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# VIII. SIGN-OFF

### 1. IS/S Channel Technology
Tom Alvich
Steve Ciambrone

### 2. ATM Management and Development
Bill Raymond

### 3. ATM/Debit Card Operations
Peter Abowd
Kirk Lindsey

### 4. ATM/Debit Card Project Management
Eric Doyle

### 5. ATM, Debit Card & Authorization Systems
Mark Gilbert
Anne Zeller

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